First with the News

Reliable, Accurate

News of the Industry

PAGE 887 VOLUME 62 *Philadelphia, Saturday, June 7, 1930* NUMBER 23

British to Invade Canadian Markets

Empire Chamber Session Discusses Competition With American Manufacturers

LONDON, May 29—British automobile manufacturers propose to establish in Canada assembling and manufacturing plants backed by aggressive salesmanship, it developed from private discussion between British and Canadian delegates attending the Congress of the Empire Chambers of Commerce today when what was described as United States dominance of the Canadian motor markets was among the subjects discussed.

Canadian delegates submitted three principal points:

1. That Britain should imitate the example of the United States by providing gas far as possible for manufacturing plants in Canada as the most effective way of meeting foreign competition there.

2. The necessity of having in Canada centers for assembling, where organization could be developed for the provision of spare parts.

3. The necessity of more aggressive salesmanship.

Reporting to the Congress this afternoon, P. J. Hannon, the chairman of bilateral discussions, said he had received from British motor manufacturers a letter in which they said they were prepared by coordination and cooperation to make a really concentrated attack upon the Canadian market through more highly organized methods of advertisement and publicity.

Gear Makers to Meet in Canada

CLEVELAND, June 3—At a recent meeting of the Executive Committee of the American Gear Manufacturers Association it was decided to hold the semi-annual meeting of the Association next fall at the Hotel Clifton, Niagara Falls, Canada, Sept. 29 and 30 and Oct. 1. At the same meeting A. A. Ross of the General Electric Co. was unanimously elected chairman of the General Committee, to succeed B. F. Waterman, of the Brown & Sharpe Mfg. Co., who was elected president of the Association at its annual meeting in Cincinnati recently.

Daniels Broadcast Race Reports

INDIANAPOLIS, May 30—Harry Daniels, correspondent for AUTOMOTIVE INDUSTRIES *and automobile editor of the Indianapolis News, broadcast the running report of the races here today.*

Airway Lighting Extension Planned for Next Year

Department of Commerce Will Expand Radio Projects

WASHINGTON, June 7—Upon the completion of a program calling for the lighting of 3000 miles of airways during the next fiscal year, there will be 17,500 miles of Federally lighted airways available for aircraft operation, it was announced today by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

May Production is Off

NEW YORK, June 6—Automobile production for May is estimated at 433,328, according to an announcement made by directors of the N.A.C.C. It compares with 636,250 in May, 1929, and 466,887 for April of this year. This represents a decline of 32 per cent from May, 1929, and 7 per cent from April, 1930.

Hudson Shipments Gain

DETROIT, June 3—Hudson Motor Car Co. reports May shipments to dealers of 12,779 Hudson and Essex cars, making the total shipments for the first five months of the year 81,741. This represents an increase of 26,251 over the last five months of 1929.

Buick Ships 9374

DETROIT, June 4—Buick Motor Co. shipped 9374 Buick and Marquette cars in May as against 9601 in April and approximately 12,000 in May, 1929.

Reo Shipments Reach 1759

DETROIT, June 4—Reo Motor Car Co. shipped 1759 cars and trucks in May against 2647 in April and 4453 in May, 1929.

Chrysler Sales Up, Plymouth is Leader

Shipments Drop as Compared With May, 1929, But Gain Over April

DETROIT, June 4—Shipments of all divisions of Chrysler Motors for the month of May total 40,644 cars, an increase of 3153 or 8.5 per cent over April, 1930.

May shipments this year were 74 per cent of the same month last year, the best relative showing made this year to date, April shipments being 63 per cent of April last year. May shipments this year exceeded the shipments in May, 1928, by 1040.

Outstanding among the Chrysler divisions during the month just passed was Plymouth, whose shipments of 14,077 showed an increase over April of 5205 cars or 58 per cent. De Soto with shipments of 6347 represents an increase of 39 per cent.

Shipments of cars bearing the Chrysler name totaled 9386 and the Dodge passenger cars 8736. Dodge shipped 1806 commercial vehicles and Fargo, 292.

Reuter Makes Address

DETROIT, June 4—I. J. Reuter, president of the Olds Motor Works and managing director of the Opel plant at Russelsheim, Germany, addressed the Civic Bureau of Lansing at the Hotel Olds Monday night and told a group of 220 persons of the steps the German Government has taken to aid and protect the laboring man.

Ford Produces 191,813 Units

DETROIT, June 6—World production of Ford cars and trucks, including shipments for foreign assembly, totaled 191,813 in May, according to the company's official announcement. Of these, 165,636 were produced in the United States, exclusive of exports.

Winton Sells to G.M.

CLEVELAND, June 4—Winton Engine Co. stockholders voted to sell the concern to the General Motors Corp., through an exchange of stock. The basis is one and one-third shares of General Motors common for one share of Winton common, as recently announced in *Automotive Industries.*

Men of the Industry and What They Are Doing

White Promotes Sydnor

J. L. Sydnor, for the past five years district manager for the White Co., at Los Angeles, Calif., has been promoted to regional manager of the Pacific Coast, according to an announcement from the office of vice-president, G. A. Urquhart. He will have headquarters in San Francisco and will oversee activities of all district and branch offices in the Pacific Coast territory.

Mr. Sydnor has been with the White company for 13 years, having worked at the home office in Cleveland and as district manager at Salt Lake City, San Francisco and Los Angeles.

To fill the vacancy at Los Angeles, Rolla W. Moore, heretofore manager of the Portland, Ore., office, has been promoted to district manager, and Ralph Guthridge of Los Angeles, has been promoted from salesman to manager at Portland.

Peerless Names Reinitz

A. L. Reinitz, New York, was recently appointed director of advertising of the Peerless Motor Car Corp., according to J. A. Bohannon, president. Mr. Reinitz has had 11 years' experience in automotive advertising. He was at one time assistant advertising manager of the Studebaker Corp., and later export advertising manager of that company. From the Studebaker Corp. he went to one of the largest international advertising agencies in the world as vice-president and manager of their New York office.

Rosenberg is Honored

Heyman Rosenberg, vice-president of the Parker-Kalon Corp., New York, was among the scientists and engineers to be honored by the Franklin Institute of Philadelphia at the Medal Meeting held by the Institute on May 21. Mr. Rosenberg was awarded the Institute's Certificate of Merit for his development of Parker-Kalon Hardened Self-Tapping Screws.

Royce is Made Baronet

LONDON, June 2—Frederick Henry Royce, founder, director, and chief engineer of Rolls-Royce, Ltd., who designed the Rolls-Royce "R" engines with which Flight Lieutenant Waghorn won the Schneider Cup Races of 1929, in his Supermarine S-6 seaplane, received a baronetcy in the birthday honors list of George V of England. The list was published this evening.

Sam Miles Returns

NEW YORK, June 3—S. A. Miles, show manager of the National Automobile Chamber of Commerce, returned on Decoration Day from an eight weeks trip to Europe.

Arrives for Visit

Sir William Letts

NEW YORK, May 30—Sir William Letts, managing director of Willys-Overland-Crossley Ltd., England, arrived today aboard the S. S. Berengaria for a visit to the Toledo plant of the Willys-Overland Co.

N.A.C.C. Entertains Plant

NEW YORK, June 3—A. E. Plant, president of the Chamber of Automotive Industries, New South Wales, Australia, who is visiting this country to study the motor truck industry with a view to obtaining information to assist the further development of that industry in his own country, was tendered a luncheon today by the National Automobile Chamber of Commerce at the Transportation Club.

Speaking informally after the luncheon, Mr. Plant said that the chief obstacle to be met by the truck industry today in Australia is the active opposition of the government owned railroads and trolley systems. Due to the fact that these means of transportation are owned and operated by the governments of the various states it has been possible for them to obtain legislation that is almost prohibitive of truck and bus competition. He feels, however, that by the use of educational propaganda, it will eventually be possible to demonstrate the advantages of motor transportation for the shorter hauls and secure more advantageous conditions.

Among the guests at the luncheon were D. M. Dow, official secretary for Australia in United States; David Fenner, manager of the public works department of Mack Trucks; Thomas Blagden, assistant export manager of White Truck Co., and H. Hapersberg, vice-president of Relay Motors.

Swayne Rochester's Guest

Alfred H. Swayne, vice-president of General Motors Corp., was guest of honor at a dinner sponsored by the Rochester, N. Y., Chamber of Commerce on May 28, in appreciation for the recent removal to Rochester by General Motors of its Delco Light Co. Mr. Swayne promised the corporation's affairs would be an "open book" to the city in line with its policy of giving the public all facts of interest about the business and prophesied that an upturn in industry would be noted very shortly.

Other speakers at the dinner included Harry W. Arnold, vice-president and general manager of Delco in Rochester; Edward A. Halbleib, president of North East Appliance Co., recently acquired by General Motors. Gilbert J. McCurdy, president of the Chamber of Commerce, welcomed the corporation to the city on behalf of that organization and Vice-Mayor Isaac Adler welcomed it on behalf of the city.

Munro Sent to Europe

Russell Munro, who has been special representative for Auburn Eastern Canada, has been assigned to the European market and has sailed for Cherbourg, France, R. S. Wiley, Auburn export manager, announces. Munro has spent a number of years in the European market and has had a wide experience in the automotive field. He will work in conjunction with Howard M. Nedeau, who has been representing Auburn and Cord interests on the Continent for the last year.

Olds to Get New Yacht

DETROIT, June 2—R. E. Olds, chairman of the board of Reo Motor Car Co., and Mrs. Olds have gone to New York City to inspect their new yacht which has been in the process of construction for several months. The yacht is 90 ft. long and is powered by two six-cylinder Diesel engines. It carries a crew of five men.

Ricard Sails for Europe

J. H. Ricard, president of the North Africa Motor Tours, and former French Minister of Agriculture, sailed today on the S. S. France, returning from a brief trip to this country. He came over earlier this week on the maiden trip of the S. S. Lafayette and participated in the Lafayette and Jefferson celebration.

Brannigan Returns to Post

NEW YORK, June 2—R. A. Brannigan, manager of the patents department of the National Automobile Chamber of Commerce, who has been ill for several months, returned to his office this week.

Andrew L. Riker Dies Suddenly at Home; Had Just Returned from S.A.E. Meeting

PHILADELPHIA, June 2—Andrew L. Riker, automobile pioneer and an engineer of unusual accomplishments, died at his home in Fairfield, Conn., on Sunday, June 1, while in his sixty-second year. The cause of death was heart failure. Mr. Riker had just returned from French Lick, Ind., where he had taken a prominent part in the celebrations to commemorate the twenty-fifth anniversary of the Society of Automotive Engineers, of which Society he had been the first president.

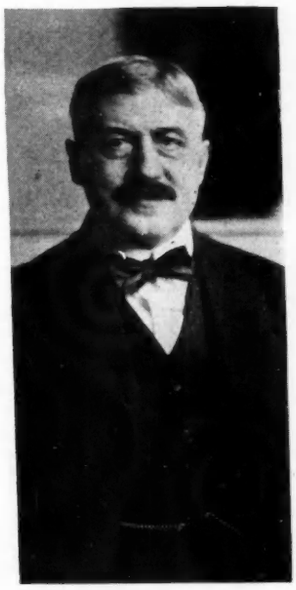
Ricker was born in New York City and received his higher education at Columbia University, where he graduated from the law school. His first work on motor vehicles even preceded his college term, however, for as early as 1884, when only 16 years old, he had built an electric tricycle of which each rear wheel was driven by a motor supplied with current by a primary battery. This tricycle ran but was recognized to be an impractical vehicle. After his graduation Riker again took to the same line of work and produced a four-wheeled vehicle. He started with two ordinary pedal bicycles which he joined by means of cross tubes and which he provided with a common rear axle. A motor was mounted under the seat on the upper cross bar and a battery was hung beneath the rear axle. This machine was illustrated in one of the first issues of *The Horseless Age* in 1895.

During the late eighties, when only twenty years old, Riker became president of the Riker Electric Motor Co. of Brooklyn, N. Y., which is credited with having produced the first electric motors with slotted armature core, all previous electric machines having been surface-wound.

The two first electric machines produced by Riker, of the cycle type, may be regarded as the experiments of an amateur, but in 1896, after public interest in motor vehicles had been aroused by the Times-Herald race and other contests, Riker built a four-wheeled electric vehicle of a type which was a regular article of manufacture for a considerable number of years, and in 1899 the Riker Electric Vehicle Co. was organized, which built a factory at Elizabethport, N. J. There complete lines of both passenger and commercial vehicles were developed, the trucks ranging in capacity up to 5 tons.

Riker early took to racing as an effective means of propaganda for the new vehicle, and with one of the machines built at Elizabethport won a three-heat race at Narragansett Park near Providence during the Rhode Island State Fair in 1899. Later, on the Merrick Road on Long Island, N. Y., he won a 50-mile race in 2 hrs. 3 min. 3 sec., and he also established a world's speed record of a mile in 63 sec. with a specially built electric racer. All of these races were open events, electrics competing with vehicles of other motive power, and the machines were driven by Riker himself.

Some of the early delivery wagons turned out by the Riker Electric Vehicle Co. were placed in service by well-known New York commercial houses, and the firm of B. Altman & Co. used



A. L. Riker

one such wagon continuously for 17 years. Aside from the fact that they were well designed and built, these early electrics owed their longevity to the comparatively low power of their motors and their consequent low speed.

After a few years it became evident that the electric vehicle would have only a small place in the field of motor transportation, and Riker then turned his attention to gasoline. The Riker Electric Vehicle Co. was taken over by the Electric Vehicle Co. of Hartford, Conn., and Mr. Riker was associated with that firm for a short time. In 1902 he developed a gasoline passenger car and interested the Locomobile Co. of America in its manufacture, which company previously had been producing light steam vehicles. From that time on until about 1920 Mr. Riker was actively connected with the Locomobile company in the capacity of vice-president and chief engineer. The Locomobile for a great many years was one of America's outstanding quality cars. A Locomobile racer driven by George Robertson won the fourth Vanderbilt cup race in October, 1908, at an average speed of over 64 m.p.h.

Mr. Riker was chairman of the Mechanical Branch of the Association of Licensed Automobile Manufacturers, and he also was one of the organizers of the Society of Automobile Engineers. He was elected the first president of this Society and held this office for three years.

In 1916, when the Secretary of the Navy requested the Society of Automobile Engineers to appoint two members to serve on the Naval Advisory Committee, Riker was one of two chosen for this appointment by membership vote from a considerable number of nominees.

During his last years with the Locomobile Co. Riker designed a line of worm-drive trucks which were marketed under his name for a short period. Since resigning from the Locomobile Co. he had devoted his time to consulting engineering work.

All of the motor vehicles produced by or under the direction of Mr. Riker, from the early electrics on, were notable for their clean-cut workmanlike design, and while Riker acted in an executive capacity with the different companies with which he was connected and naturally did not have the time to work out all of the details himself, this quality ran so consistently through all of his products that his influence on their design was unmistakable.

Mr. Riker is survived by his widow, Edith Whiting Riker, and three children of which one son, A. L. Riker, Jr., is connected with the American Chain Co. of Bridgeport, Conn. In addition to being a member of the Society of Automotive Engineers he was a member of the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the Engineers Club of New York, the Automobile Club of America, and the Aero Club of America.—P.M.H.

American Manufacturers Seek Paris Salon Space

General Motors Plans Independent Exhibit at Same Time

PARIS, (By Mail) — Twenty-three American makers have filed application for booths in the annual French Automobile Salon, to be held in the Grand Palais from Oct. 2 to 12. The firms are Packard, Hupmobile, Auburn, Cord, Franklin, Peerless, Reo, Hudson, Essex, Ford, Lincoln, Willys-Overland, Stearns-Knight, Nash, Stutz, Pierce-Arrow, Studebaker, Graham Paige, Marmon, Duesenberg, Gardner, Chrysler and Dodge. Under a decision of the French Manufacturers' Federation, Chrysler has been excluded for having taken part in an unauthorized speed test from Paris to Nice, but has been given the option of paying a fine.

As a protest against what it considers to be second rate positions in the exhibition, General Motors is remaining out of the Paris Show and probably will run an independent exhibition in some public hall.

Belgian Deputies Oppose Increase in Car Tariff

Country Cannot Embark on Protectionist Program, is View

BRUSSELS, June 3—Premier Jaspar, seconded by Emile Vandervelde, the Socialist leader, today took a definite stand in the Chamber of Deputies against increasing the duties on foreign automobiles entering Belgium. He declared that Belgium, having proposed a tariff truce at Geneva, could not now herself embark upon a protectionist policy.

Deputy Huysmans violently attacked government for permitting the Postal Ministry to purchase American, German and Czechoslovak cars because they were 30 per cent cheaper than Belgian-made cars and demanded that increased customs duties be placed on incoming automobiles to compensate for the difference in price. He also accused the foreign motor industries of fraud, amounting to 60 per cent on the duties paid on spare parts and automobiles entering Belgium.

Premier Jaspar replied that the Belgian Government would always buy in the cheapest market and that no increase in the customs would be considered.

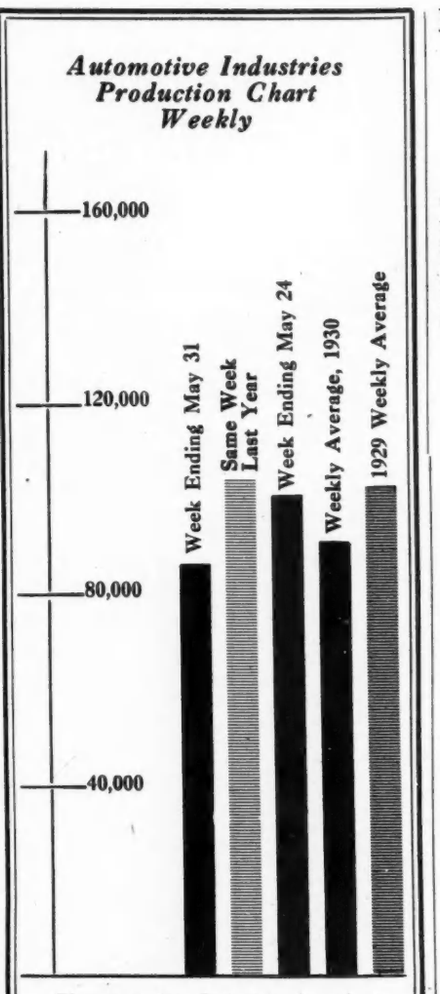
N.A.C.C. Directors to Meet

NEW YORK, June 4—The National Automobile Chamber of Commerce plans to hold its annual meeting at its headquarters here Friday, June 6, following the regular monthly directors' meeting which will be held Thursday. The meeting is to be held a day later than usual this year in order that a larger number of the presidents of member companies may be present.

A. R. Erskine, president of Studebaker, is expected to present the outlook for the last half of the year at the morning session. Alfred P. Sloan, Jr., president of General Motors will speak on the advantages of knowing facts about advertising, dealer relations, and sales, and James D. Mooney, president of General Motors Export Co., will speak on our tariff, export problems and the outlook, winding up the morning session. In the afternoon session, R. H. Grant, vice-president of General Motors, will discuss how the highway safety plan is working, stressing the work on scrapping of unsafe cars. Roy D. Chapin, chairman of the board of Hudson, will speak on what the coming international road congress means to highway transportation, and there will be also a talk on trade practices that harm the business here and abroad.

Pneumatic Buys Coast Concern

LOS ANGELES, June 3—Chicago Pneumatic Tool Co. has acquired Cochise Rock Drill Mfg. Co. of Los Angeles for approximately $1,000,000. Payroll of latter will be increased to 200 from 100 employees and production will be expanded to include mining and excavation tools as well as pneumatic and electrical equipment.



The composite chart appearing above will delineate each week production of passenger cars in the United States and Canada, for the week preceding publication of the issue in which it appears, together with production for the preceding week, and other factors. Data used in compiling it are obtained in confidence from a number of sources. Other factors may be added, dependent upon the cooperation of additional sources of information.

Graham Reports Output

DETROIT, June 3—Graham-Paige production for May was 4797 units, according to an announcement from the factory.

Ford Price Reductions Range from $5 to $25

Phaeton and Roadster Not Included in New Revisions

DETROIT, June 2—The Ford Motor Co. yesterday announced reductions in the prices of Ford cars and trucks, ranging from $5 to $25. They are effective Monday, June 2. The new prices f.o.b. Detroit and the amounts of the reductions follow:

Standard Fordor, $600; reduced $25.
Cabriolet, $625; Model A panel delivery, $570.
Model AA panel delivery, $780; reduced $20 each.
Town sedan $660; de luxe sedan $640; station wagon, $640.
Model AA chassis, $510; reduced $10 each.

Standard coupe, $495; sport coupe, $525; Tudor, $495; de luxe coupe, $545; Model A chassis, $345; pick-up delivery with open cab, $425; pick-up delivery with closed cab, $455; de luxe delivery, $545; reduced $5 each. No reductions were made in the phaeton, which sells for $440, or the roadster, which is priced at $435.

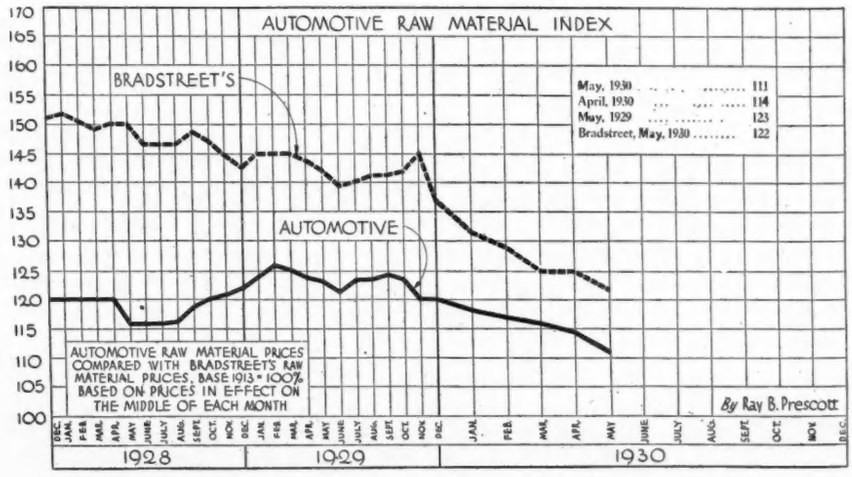
The most recent reduction in Ford prices was last November when the company also increased its minimum wage from $6 to $7 a day. Up to May 20 of this year 610,057 cars and trucks were delivered to purchasers.

Canadian Ford Cuts Prices

DETROIT, June 3—Ford Motor Co. of Canada, Ltd., has announced price reductions on Ford cars and trucks ranging from $15 to $55, effective June 2.

The new list prices f.o.b. East Windsor and reductions, follow:

	New Price	Reduction
Roadster	$520	$20
Phaeton	530	20
Standard Coupe	595	25
Sport Coupe	630	25
De Luxe Coupe	655	15
Cabriolet	750	40
Tudor Sedan	595	25
Fordor Sedan	720	55
Town Sedan	795	40
Light Delivery	510	15
Model A Commercial Chassis	415	20
Model AA 1½ Ton Chassis	610	35


AUTOMOTIVE RAW MATERIAL INDEX
BRADSTREET'S
AUTOMOTIVE
May, 1930 111
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Bradstreet, May, 1930 122
AUTOMOTIVE RAW MATERIAL PRICES COMPARED WITH BRADSTREET'S RAW MATERIAL PRICES, BASE 1913 = 100% BASED ON PRICES IN EFFECT ON THE MIDDLE OF EACH MONTH
By Ray B. Prescott
1928
1929
1930

Steel Markets Unchanged on Rush-Order Platform

Price Situation Steady With Shading Prevalent

NEW YORK, June 5—Steel mill operations continue along unchanged lines. A few fortunate rolling and finishing mills have enough orders to engage somewhat more than two-thirds of their capacity which is the top rate for the others. What little fresh business has been booked this week is of the same character as that which came out in May. Nearly all specifications are accompanied by urgent requests to rush shipments, and in spite of mills being more than eager for every dollar's worth of business they can get, some of these shipping conditions allow for so little time that mills are unable to comply with them.

The general price situation remains very much the same. In the Detroit market, tonnage business in black sheets would find takers at 2.55 cents, Pittsburgh, and perhaps a shade under that level, but the market, as a whole, averages probably $1 per ton higher. Blue annealed, 10-gage, are now quoted at 2 cents, Pittsburgh, strips being quoted at as low as 1.80 cents. The 13-gage blue annealed price is down to 2.15 cents, Pittsburgh. Cold-rolled strip steel has sold recently at as low as 2.45 cents, Pittsburgh or Cleveland. The situation with reference to full-finished automobile sheets is unchanged.

Some tonnage business continues to carry a 3.70 cents base price, but finishing mills insist that the 3.80 cents quotation has by no means become obsolete on the general run of business. Demand for steel bars from automotive consumers has eased off and concessions are no more a rarity in transactions in the bar market than in other products. Quiet routine conditions characterize the market for bolts and nuts.

Pig Iron—Automotive foundries are taking iron in small lots. The market generally is very quiet. The Michigan quotation is $19 @ $19.50 for both foundry and malleable. The Valley market is dormant at $18.50 for foundry and $19 for malleable, furnace.

Aluminum—A little more inquiry for foundry metal from automotive consumers is reported. Quotably the market is unaltered.

Copper—Consuming demand is light, the 13 cents price continuing to hold for what business is done. The National Metal Exchange will vote at a meeting on June 23 on amendments of basic grades, the change being intended to broaden free trading in copper.

Tin—A showing of 40,000 tons world's visible supply at the beginning of the month had a depressing effect on the market which opened the week at 30¾ cents.

Lead—Quiet and unchanged, with the undertone unsettled because of unsteady market conditions abroad.

Zinc—Consuming demand slow. Easy.

Lincoln Takes Detroit Outlet

DETROIT, June 2—The Lincoln Motor Co. has taken over retail sales in Detroit, having acquired the Lincoln business of Peter J. Platte, Detroit distributor, it was announced yesterday. Mr. Platte will devote his entire time to his Ford dealership here.

Approves Car Appliances

CHICAGO, June 2—The 1930 list of inspected automotive appliances has been issued by the National Board of Fire Underwriters. This list covers a wide variety of mechanical and electrical equipment such as ammeters, auto heaters, brake appliances, electric vaporizers, locking devices, and others of similar nature.

Buick Buys Dealership

CINCINNATI, June 2—Harry S. Leyman, one of the pioneer motor car dealers in Cincinnati and since the early days distributor in this territory for Buick cars, the franchise including Dayton, Ohio, and Louisville, Ky., sold his automobile interests to the Buick Motor Co., and retired from the motor car field Saturday.

Negotiations for purchase of the Leyman Buick Co. have been carried on for several weeks, in line with the Buick company's reported plan to distribute its products through factory branches exclusively and were completed Saturday. The entire Leyman organization will remain intact at the local branch as well as at Louisville and Dayton.

R. F. Kenney, who has been connected with the Buick regional office at Memphis, has assumed charge as branch manager with S. R. Daniell as his assistant. The Buick company has taken a 10-year lease on the salesroom at Seventh and Walnut Sts., and the Buick service building at Seventh and Broadway.

Peerless Adds Custom Model

CLEVELAND, June 3—In addition to the three series of straight eights presented last January, J. A. Bohannon, president of the Peerless Motor Car Corp., today announced a fourth line, a Weymann body on a special Peerless chassis.

This new car, powered by a Peerless straight-eight engine (3⅜ in. by 4½ in. bore and stroke) on a 125 in. wheelbase, is now in production, Mr. Bohannon said. This model is furnished in numerous color and upholstery combinations and is listed under $3,000 at the factory.

Borg Service Unit Gains

CHICAGO, June 2—Sales volume of Borg-Warner Service Parts Co., replacement parts distributing subsidiary of Borg-Warner Corporation, is currently more than 50 per cent ahead of the sales volume of five constituent companies at the time of its organization in January, according to C. S. Davis, president of the parent company.

Firestone Has New Line

AKRON, June 2—A new line of balloon tires to be sold at a low price has been announced by the Firestone Tire and Rubber Co. They will be sold under the name of "Anchor Double Breaker" and are claimed to embody all the characteristics of balloons in higher price classes.

Gasoline Use Increases 7 Per Cent for April

Stocks on Hand Reduced Sharply, Report Indicates

WASHINGTON, June 3—Increased demand in the United States for petroleum products during April, particularly for gasoline, resulted in sharply reducing stocks on hand at the end of that month. The Bureau of Mines reported today that total stocks amounted at the end to 692,626,000 bbl., or 1,894,000 bbl. less than the total one month previously.

Total stocks of motor fuel, including gasoline in all forms, amounted at the end of the month to 54,435,000 bbl., against 55,239,000 bbl. in stock at the end of March.

The indicated domestic demand for gasoline in the United States throughout April was 1,152,000 bbl. per day, which represented an increase of 7 per cent over the rate of consumption during April last year.

April gasoline stocks on hand were equivalent to forty-one days' supply for domestic and export trade as compared with the forty-six days' supply on hand at the end of March.

Ford Plans Foreign Schools

DETROIT, June 2—Trade schools patterned after the two divisions of the Henry Ford Trade School for Boys, at Highland Park and Dearborn, Mich., are soon to be established in England and Russia. The English school, which will be under the supervision of the Ford Motor Co., Ltd., will be placed temporarily at Manchester, but later will be moved to a point adjoining the company's new works at Dagenham. The Russian school is to be built and maintained by the Soviet government at Niji Novogorod.

G.M. Holders Increase

NEW YORK, June 6—The total number of General Motors common and preferred stockholders for the second quarter of 1930 was 243,428, compared with 240,483 for the first quarter. There were 221,333 holders of common stock and the balance of 22,095 represents holders of preferred and debenture stocks. These figures compare with 218,392 common stockholders and 22,091 preferred for the first quarter of this year.

Chrysler Models Reduced

PHILADELPHIA, June 4—Current models of the Chrysler "Imperial" are being offered at $500 below list prices by the Chrysler Philadelphia Co., in anticipation of new models to be offered in midsummer, according to a local announcement.

Hupp Produces 3348 in May

DETROIT, June 3—Hupp production for May was 3348 units, according to factory information.

Pines Winterfront Co. Increases Net Profit

Shows Gain Per Share on Basis of Present Financing

CHICAGO June 2—The annual report of the Pines Winterfront Co., to be released June 9 at the time of the annual meeting, will show a substantial increase in earnings for the last twelve months over the twelve preceding months. The report concerns operations during the fiscal year ended April 30, last.

For the twelve-month period ended April 30, 1929, the company reported a net income of $555,554, or $5.56 a share on the 100,000 shares then outstanding, and $1.68 a share on the present outstanding capitalization of about 330,000 shares. The income for the 1930 fiscal year would be equivalent to $2.50 a share on the present capitalization. The expected increase in net earnings in the year ended April 30, 1930, is about 50 per cent.

During the year just ended, the company followed a conservative policy, whereby extraordinary non-recurring charges were charged against income, instead of capitalizing them. The expense of moving into the new plant at Cicero Avenue and Division Street last year was charged against current operations. The increase in business and income during the last year was through a growth in the number of automobile manufacturers who are installing the winterfront as standard equipment. The natural decrease in the volume per customer is more than balanced by the sale to manufacturers.

Cezanne to Resign

PARIS, May 24—Henri Cezanne, secretary of the Bureau Permanent des Constructeurs d'Automobiles since its formation in 1911, is expected to resign before the end of the present year. The Bureau Permanent is an international grouping of the national automobile manufacturers associations, including the N.A.C.C., having its headquarters in Paris. Recently, on the initiative of the American delegates, the scope of the bureau was enlarged and new offices were secured in Rue Jean Goujon, Paris. After resigning this post, Henri Cezanne will devote himself exclusively to managing the annual Paris automobile shows.

Ceylon Registrations Increase

COLOMBO, CEYLON, April 27—During the course of last month the number of motor vehicles registered and in use in Ceylon increased by 131. This, although more than double the increase in February, which was only 63, is yet far short of what has been the average monthly increase during the last year.

Of last month's increase of 131, more than half, namely, 71, denotes the increase of vehicles from United Kingdom.

Budd Gets Glider Parts Order

PHILADELPHIA, June 2—The Edward G. Budd Mfg. Co. reports, through H. A. Coward, secretary, that it has received substantial orders for welded steel glider ribs from Peel Gliders, Inc., of New York.

Begins Plant Construction

DETROIT, June 2—Construction of the $250,000 addition to the plant of the General Motors Truck Co., Pontiac, Mich., was begun recently. The building, which is to be 180 by 580 ft., one story high, will be used for engineering and warehouse purposes. It is to be completed in 60 days. An additional quarter-million-dollar investment will be necessary to equip it. Officials of the company pointed out that the structure has been needed for some time to facilitate present operations and that its erection at this time does not necessarily mean a general increase of production.

Technical Group Formed

WASHINGTON, D. C., June 2—A committee on scientific and technical questions relating to Hertzian oscillations and electro-magnetic waves in their application in aviation will be formed in France following a decree issued by the Air Minister, upon recommendation of the General Technical Director, according to press reports received in the Aeronautics Trade Division, D. of C. This group will be composed of two representatives from the General Direction of the Air Force, the Direction of Commercial Aeronautics and of the General Technical Direction. In addition to these there will be a representative from the National Meteorological Office and representatives from the Air Ministry. The committee is to act in an advisory capacity to the Air Ministry.

Kearney Publishes Booklet

MILWAUKEE, WIS., June 2—"Milling Methods of the Automotive Industry" is the title of a booklet recently published by Kearney & Trecker Corporation of Milwaukee, Wis. This booklet describes a variety of interesting milling machine set-ups in some of the outstanding automotive manufacturing plants.

Zinc Research Described

NEW YORK, June 2—The activities of the research and semi-commercial technical divisions of the New Jersey Zinc Company are interestingly described in a book entitled "The Technical Department of the New Jersey Zinc Company" just published in a limited edition by the New Jersey Zinc Company of New York.

Marquette Completes Unit

CHICAGO, June 2—Erection of a new building which, with material storage yard, aggregates 75,000 ft. of floor space, has been announced by the Marquette Tool & Mfg. Co. The development was begun Jan. 1.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, June 4—Spring trade was further delayed last week by cold and wet weather over large sections of the country. Corn planting is completed, but warmer weather is needed in the corn belt. Conditions for spring wheat are on the whole favorable. In the South, the cotton mills are working only every other week, while 75 per cent of the country's cotton-mill capacity has agreed to curtail production.

MAIL ORDER SALES

Sales of one large mail order house for the four weeks ended May 21 decreased 6.1 per cent below those in the corresponding period last year, while sales from Jan. 2 to May 21 decreased 2.3 per cent below those a year ago.

RETAIL TRADE

Retail trade in the United States during April, according to a report issued by the Federal Reserve Board, was 6 per cent above that a year ago.

FARM LAND VALUES

Farm real estate values, as of March 1, according to the United States Department of Agriculture, showed a decline of 1 per cent below those a year earlier. Decreases were reported in all states except Maine, Connecticut, Wyoming, Colorado, New Mexico and Oregon.

CRUDE OIL OUTPUT

Average daily crude oil production for the week ended May 24 amounted to 2,579,500 bbl., as compared with 2,607,900 bbl. for the preceding week and 2,690,350 bbl. a year ago.

STOCK MARKET

Stock market activity last week was again on a reduced scale. There were some sharp declines, but prices on the whole held up rather well. A few issues closed the week considerably higher, but the general list made only a very moderate gain. Call money remained at 3 per cent.

BROKERS' LOANS

Brokers' loans in New York City during the week ended May 28 increased $7,000,000. The increase of $15,000,000 in the two weeks ended May 28 follows a decline of $267,000,000 in the two weeks preceding.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended May 28 showed an increase of $37,047,000 in holding of discounted bills. Holdings of bills bought in the open market decreased $11,234,000, while there was little change in holdings of Government securities. The reserve ratio on May 28 was 82.9 per cent, as against 83.5 per cent a week earlier and 83.6 per cent two weeks earlier.

Plant Building Drops Below Seasonal Slump

Machine Tool Sales Are Spotty, New Equipment is Off

PHILADELPHIA, June 5—Automotive construction as well as machine tool sales slumped during the past week under the normal seasonal decline, reports from manufacturing centers of the country indicated.

Among the announcements made by automotive concerns during the past week were:

Frank J. Schefcik, Long Island City architect, plans 6-story automobile garage and repair shop to cost $250,000.

Passaic County (N.J.) will soon take bids on airport, reconditioning shops, etc., near Preakness, N. J., project to cost $200,000 with equipment. Austin Co., New York, architect and engineers.

Adams Black & Sons, Jersey City (automobile bodies), awarded contract to A. W. Crone & Son, Inc., for $75,000 plant addition.

Bush Mfg. Co., Hartford, Conn. (radiators), will soon award contract for manufacturing addition to plant.

Ellerbe & Co., St. Paul, architect, has awarded contract for $375,000 repair and service garage.

Oklahoma City (Okla.), Packard Motor Car Co. planning $100,000 service and repair garage.

Goerlich, Inc., Toledo, manufacturers of automobile parts such as mufflers, heaters, combination cutouts and heaters and other parts, with a large plant at 1213 Norwood Ave., Toledo, announced incorporation of a subsidiary, Associated Parts, Inc., to handle distribution of the company's products.

Tyson Placing Orders

MASSILLON, OHIO, June 2—Orders for $155,000 worth of machinery, part of the production equipment of the new Tyson Roller Bearing Co., are now being placed, according to an announcement by C. E. Stuart, president of the corporation.

Within the next 60 to 90 days the new corporation expects to have this machinery installed in its plant here and production under way.

The $155,000 orders represent only part of the expenditures of the company for new machinery. In addition to its new orders, the company will use considerable machinery installed in the plant of the Byers Machine Co., which was included in the purchase of the plant site. The Tyson tapered roller bearings will be made from steel produced by the Republic Steel Co. of this city.

Quebec Licenses Increase

QUEBEC, June 2—An increase of nearly 36,000 in the number of auto licenses issued by the Provincial Revenue Department this year is recorded by official figures issued yesterday. Up to May 1, 1930, 110,191 licenses had been issued this year, as compared with 94,371 at a similar date last year. During the month of April alone 47,197 licenses were issued, for both new and used machines. These figures are much higher than in previous years, the reason for this being the fact that starting last year, it was possible to obtain license plates as early as Feb. 1 in place of a later date.

Kinner Making New Engine

GLENDALE, CALIF., June 3—The Kinner Airplane & Motor Corp. will go into immediate production on a new engine designated as the B-5. Rated at 125 hp. at 1925 r.p.m., this engine recently sucessfully passed the Department of Commerce 50-hr. test run and has been awarded Approved Type Certificate No. 51.

Austin Begins Shipments

DETROIT, June 3—Officials of the American Austin Car Co. state that initial shipments to distributors began last week from the company's plant at Butler, Pa. Production was begun several days ago and plans are being made for a steadily increased output. As of this date contracts approved by the company call for 166,875 units. The company has more than 10,000 orders on hand for immediate shipment. Of the approximately 47,000 automobile dealers in the United States, the Austin reports that it has had inquiry from some 30 per cent. There are now 94 Austin distributors in this country.

Newark Museum Exhibit

NEWARK, N. J., June 2—The Newark Museum of Art, Science and Industry has placed on exhibit a group of over 200 models showing mechanical devices and driving mechanisms. These range all the way from the simple wedge, lever, and pulley to the more complicated parts of present-day machinery. One panel consisting of sixteen models is devoted to automotive machinery and shows such devices as a four-cylinder engine, vacuum tank, carburetor, distributor, self-starter, internal expanding brake, cone and disk clutches, hydraulic jack, differential, transmission gear shift, universal joints, water pump, mechanical horn, and others. On a separate panel is shown a radial airplane engine, together with other forms of primary powerplants. All these models are cut away so as to show the workings of the various parts, and are driven by electric motors.

Shift Racing Headquarters

DETROIT, June 2—Offices for handling the plans for the Cirrus Engines Race, which is to start from the municipal airport here July 21, will be removed from New York to this city in a few days. More than 15 entries have been received and at least 30 others are expected. The prize for the event, which is being sponsored by American Cirrus Engines, Inc., will be split $15,000 to the winner, $7000 to the runner-up and $3000 to the third pilot.

General Bumper Adds Line

CHICAGO, June 2—The volume of business of the General Spring Bumper Corp., a division of the Houdaille-Hershey Corp., should be increased by approximately 1,000,000 units during the next twelve months by additional business obtained through a new line.

Compensation is Asked for Confiscation of Cars

Finance Companies Base Demand On Supreme Court Decision

WASHINGTON, June 2—The government has been called upon to recompense automobile finance companies and others holding liens against confiscated cars carrying intoxicating liquors. It is roughly estimated that these seizures during the past six years, the period of limitation of claims against the government, amount to $50,000,000, and involve more than 100,000 cars. The government itself has taken more than 4000 cars, appraised at over $2,000,000, for its own use.

Request for compensation for unlawful seizures has been made by Nathan B. Williams, counsel for Associations of Automobile Financing Companies, upon Secretary of the Treasury Mellon, the action was taken on the strength of the Supreme Court decision last Monday that automobiles seized by the government for the unlawful transportation of intoxicating liquor must be confiscated under the prohibition law and not the customs law. Where the lienors were innocent of the unlawful use of the cars they are entitled to recover damages.

These seizures have been made under sections of the Internal Revenue laws which Attorney Williams pointed out in his letter to Secretary Mellon prevented lawful claims of holders of valid liens upon cars which were seized for violating the prohibition law, but without the knowledge of the lienors. The Secretary was asked to reexamine all vehicle seizures made under Sec. 3450 and related sections of the internal revenue law and that when liens existed the amount of the liens be ascertained and certified to Congress for appropriation of the necessary funds.

Actuaries to Get Aero Data

WASHINGTON, June 3—The files of the Aeronautics Branch of the Department of Commerce pertaining to safety and accidents in civil aeronautics in the United States have been opened to the Actuarial Society of America in order that this organization may obtain all available statistical information on the safety of air travel, it was announced today by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

Maryland Title Law Revised

BALTIMORE, MD., June 3—At a conference held by state and city officials recently, an agreement was reached under which the office of the State Motor Vehicle Commissioner will refuse to transfer certificates of title to repossessed or other old automobiles unless all city taxes are paid. It was announced that the commissioner will refuse to transfer the titles or issue tags unless the applications are perforated by the City Tax Department.

Middle Western Sales Increased During April

Heavy Buying of High Priced Cars Features Market

CHICAGO, May 27—Sales of new automobiles in the Middle West at wholesale and retail, as well as those of used cars, continued to gain in April, although the expansion over March was not so large as between February and March, the Federal Reserve Bank of Chicago reports.

The increase in the value of cars sold at retail was considerably greater than that in their number, owing to heavy sales of high-priced cars. Wholesale distribution in April again showed a decided loss from a year ago, while the decline in retail sales in the year-to-year comparison was noticeably smaller than in March.

"Schedules of automobile manufacturers were further increased in April, the output of 374,606 passenger cars representing a gain of 12 per cent over March," the report says. "Production was 30 per cent less than the all-time monthly record of April, 1929, but totaled 3 per cent more than for the corresponding month of 1928. April truck output of 67,459 increased 5 per cent over March and compared with 84,346 in the same month a year ago.

"Stocks of both new and used cars continued to decline, and those of the former averaged smaller than a year ago. The value of used cars on hand declined in the comparison, but the number remained somewhat heavier.

Autocar Declares Dividend

ARDMORE, PA., June 2—The Board of Directors of the Autocar Co., on May 27, declared a quarterly dividend at the rate of 8 per cent per annum on the preferred stock of the company issued and outstanding, payable June 15, 1930, to stockholders of record as at the close of business June 5, 1930.

Buick Purchases Agency

ST. LOUIS, June 2—The Vesper-Buick Auto Co., one of the oldest local agencies, will be operated as a factory branch beginning today following the purchase of the concern by the Buick Motor Co.

Feature Issues of Chilton Class Journal Publications

Chilton Automotive Multi-Guide,
First Semi-annual Issue.
Ready about June 12
Automotive Industrial Red Book
In the mails next week

Thompson Forms Division

CLEVELAND, June 3—Continued large production of aircraft valves with prospects of greater growth in the future has made it advisable to organize an aeronautics division of Thompson Products, Inc., C. E. Thompson, president, announced yesterday. A section of 150,000 sq. ft. at the Cleveland plant is to be devoted exclusively to aircraft valve manufacture, while experimental work will be carried out in a modern dynamometer testing laboratory.

Crude Rubber Prices Lower

NEW YORK, June 2—New low record prices for crude rubber were set last week, with fairly large volumes changing hands, but on comparatively featureless trading, according to F. R. Henderson Corp. Further efforts toward curtailment of production are being considered in producing sections, and shipments from the East have fallen off, due to the May recess in tapping. London stocks have continued to increase and have reached a total of 76,953 long tons, with Liverpool stocks up to 24,722 tons. Arrivals to all ports of the United States during May are estimated at 39,225 tons.

Boeing Gets Large Order

SEATTLE, June 3—Continuation of capacity production for the Boeing Airplane Co.'s plant, with steady employment for more than 900 employees, was assured with receipt of an order for 27 planes for the United States navy, to cost more than $400,000. The order was confirmed today by P. G. Johnson, president of the Boeing Co., who stated that preparations to begin production would be started immediately.

Canadian Customs Rule Revision is Foreseen

Would Limit Dealers' Discount to 15 Per Cent for Taxation

WINDSOR, ONT., June 2—A change in customs regulations designed to benefit the Canadian manufacturer of motor cars, has been approved by members of the Cabinet at Ottawa, and is likely to be put into effect before the house is dissolved for the coming Federal election, according to information received by prominent Government supporters in Windsor.

The rate of duty on automobiles will remain unchanged, but it is proposed to vary a departmental regulation under which dealers have been able to bring in cars of American manufacture by paying duty on factory prices 25 per cent or more below the retail prices. Discounts will not be barred entirely, Windsorites are informed, but if the present intention is carried out they will be limited to 15 per cent.

Informal announcement of the pending legislation which, it is said, was received by manufacturers of motor cars at the border.

Eaton Elects Flintermann

DETROIT, May 31—C. H. L. Flintermann, president of the Wilcox-Rich Corp., and Carlton M. Higbie, chairman of the board, Wilcox-Rich, were added to the board of directors of the Eaton Axle & Spring Co. at the stockholders' meeting in Cleveland this week. Other Eaton Axle directors were reelected. Mr. Higbie, J. O. Eaton and E. B. Green were elected members of the Finance Committee. Mr. Eaton, who is chairman of the Eaton Axle board, announced that more than 85 per cent of Wilcox-Rich Corp. stock had been turned in for exchange for Eaton Axle stock. The date of deposit of Wilcox-Rich stock has been extended to June 5.

Automatic Garage Opened

CHICAGO, June 2 — Postmaster Arthur C. Lueder officiated at the opening of the new twenty-five-story "hotel" garage at 30 Quincy St. last week. This is one of three electrical garages in the world.

Calendar of Coming Events

SHOWS

Berlin, International Automobile..Nov. 6-16

CONVENTIONS

National Automobile Chamber of Commerce, Annual Meeting, New York June 6
A. S. M. E., Semi-Annual Meeting, Detroit .....June 9-12
A. S. M. E., Oil, Power & Gas Div. State College, Pa. .....June 12-14
World Power Conference, Berlin.June 16-25
Railway Supply Mfrs. Assn., Meeting and Exhibit, Atlantic City..June 18-25
American Railway Association, San Francisco .....June 23-26
American Society for Testing Materials, Annual Meeting, Atlantic City .....June 23-27
Steel Founders Soc. (Midsummer Convention) White Sulphur Springs June 26-28
American Electroplaters' Society, Annual Meeting, Washington, D. C. June 30-July 3
Society of Automotive Engineers, Aeronautical, Chicago .....Aug. 26-28
Eastern States Exposition, Springfield, Mass. .....Sept. 14-20
National Safety Council, Annual Safety Congress, Pittsburgh....Sept. 29-Oct. 4
Sixth International Road Congress, Washington, D. C. .....Oct. 6-11
Exhibition—American Roadbuilders Association, Washington, D. C....Oct. 6-11
Society of Automotive Engineers, Production, Book-Cadillac Hotel, Detroit .....Oct. 8-9
Society of Automotive Engineers, Transportation, Pittsburgh .....Oct. 22-24
Motor and Equipment Association, Convention, Cleveland.....Nov. 10-14

SALONS

Chicago, Drake Hotel .....Nov. 8-15
New York, Commodore Hotel.Nov. 30-Dec. 6

RACES

Belgium .....July 5-6
Germany (Grand Prix) .....July 13
Belgium (European Grand Prix)....July 20
Spain .....July 27
Italy (Grand Prix) .....Sept. 7
France (Grand Prix) .....Sept. 21

AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

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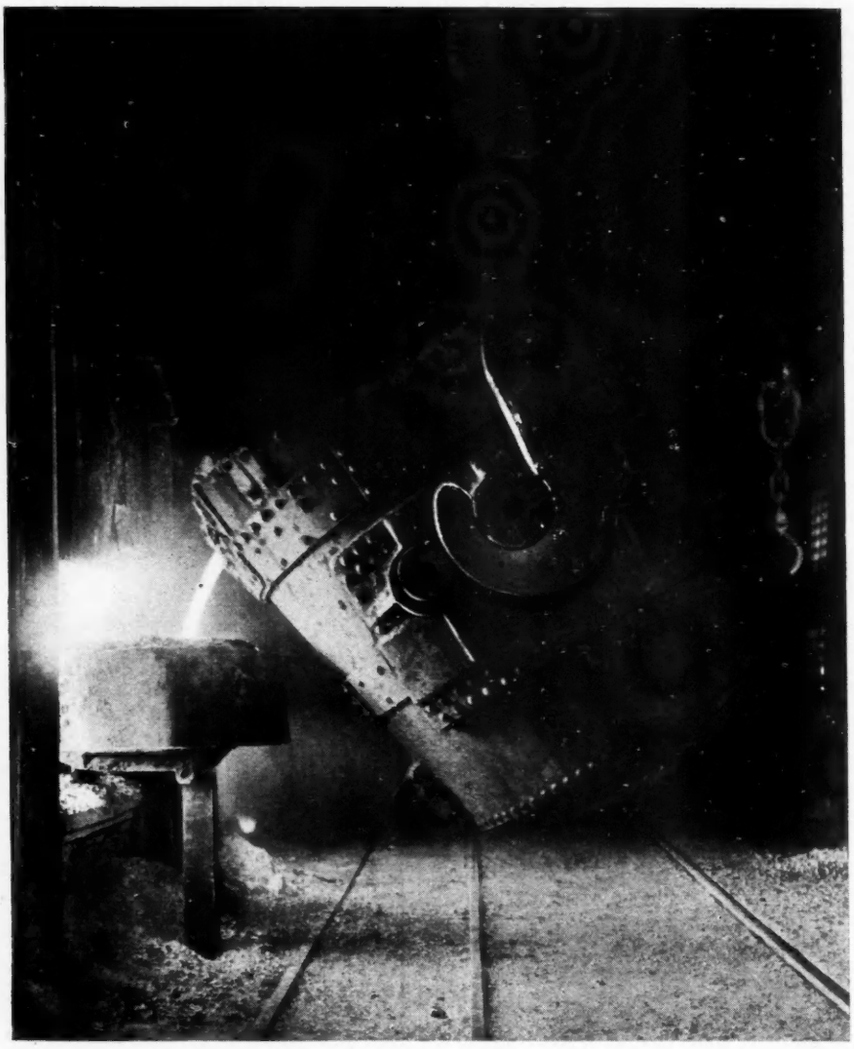

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BETHLEHEM ALLOY STEELS

AUTOMOTIVE INDUSTRIES

VOLUME 62 June 14, 1930 NUMBER 24

"Divine Right" theory has lost much replacement business for car factories + + + +

Threats are Poor Weapons in Battle to Merchandise Parts

By Norman G. Shidle

THE current decline in car and truck production as compared to last year quite naturally has turned the eyes of many vehicle manufacturers toward their parts departments for dollars of extra profit this year and in the future.

And as their eyes are focused fully on this division of their business they are seeing a profitable market, material portions of which have slipped through their fingers into the hands of independent parts manufacturers.

It's difficult for the vehicle maker to look upon these conditions without bitterness; without calling names like "pirate" at the parts makers who have built themselves solidly into the replacement structure. It's difficult, not because of any inability to see the purely economic fairness of the independent's activities, but because of a

natural human tendency to blame others for our own faults and to feel somewhat bitter toward them accordingly.

The insistence of vehicle manufacturers on their "right" to the replacements parts business probably has been responsible more than any other single thing for the amount of this business which they have lost to independents—how much of it, irretrievably, remains to be seen. Had the average vehicle manufacturer not believed that the replacement parts business was his by divine right, he probably would have been out fighting and scrambling for it in a really competitive way for the last 10 or 15 years. But believing that he ought to get it without struggling, he has, for the most part, been content to rely largely on the mere assertion of his rights as a means of holding his market.

Many dollars' worth of his own dealers' parts business has slipped through car maker's hands - - -

Action—Not Reprisals—Needed

Today more vehicle manufacturers in general—and more car manufacturers in particular—are facing the facts about the replacement parts business than ever before. Especially is this true of such manufacturers as are making an active effort to recapture some of the ground lost in this field during the last decade or so.

Naturally, the entire picture isn't altogether clear, but progress is being made toward a proper correlation of the various economic factors as part of a well defined parts marketing image.

To those car manufacturers who have thought the furtherest, the futility of negative activities is becoming apparent. They are beginning to recognize the fact that positive merchandising activity on their own part and not attempts at stultification of current efforts of competitors is the only possible way to actual, permanent gains in replacement parts business.

Most car manufacturers at the moment still are perturbed about the fact that some parts makers who sell them original equipment are competing with them for replacement business. They are trying to get these companies out of the replacement field if possible; particularly they are trying to keep any more of them from entering it.

Viewed from the standpoint of the car company executive, this might be sound theory, provided its potency as a getter of parts business for the car manufacturer is recognized as being almost nil. As matters stand today, elimination of the vendor parts manufacturer from the replacement field means more business for the independent parts makers, rather than for the car manufacturer.

Viewed purely from the selfish interest of the car company, moreover, the prudent vehicle organization will think at least twice before it carries out any threats about changing supply sources or going back to manufacture of its own parts on account of refusal of a current supply source to meet with its demands as regards replacement parts selling. The prudent organization will think twice to be sure that such action will not constitute biting off its own nose to spite its face.

Change of a satisfactory supply source is no small matter for a big passenger car company. The production manager and the chief engineer will bear vociferous witness to that fact. On many items, the car manufacturer will find all important parts competitors to be in the replacement field as well as his present supply source. He may be stymied on this score.

Exceptions to Rule

Returning to manufacturer of his own parts is an even more hazardous proposition if such return is made purely to chastise a vendor parts maker. Such a move probably would mean hundreds of thousands of dollars' worth of machine tool investment to begin with; it would mean greater sums invested in inventory; it would mean carrying the extra burden of overhead from idle machines during a period such as we now are going through; and it would mean a good many other things from a purely cost standpoint, to say nothing of convenience.

All parts, of course, are not in the same category as viewed from the vehicle manufacturer's standpoint. Most of the discussion here has had reference to such original equipment parts as are in competition with parts manufactured by independent parts makers. There are some units, of course, which are peculiar to the particular vehicle and on which the car or truck maker has practically no outside competition.

There may be certain parts which he buys from vendor parts makers which are in this latter classification. Where this is the case, he undoubtedly has something definite to gain from elimination of the vendor parts maker from the replacement field, as he could thereby get the business of independent garages and repair shops on such items.

Fight for Own Dealers

In most instances, however, the parts which he buys from a vendor parts maker are being duplicated by independent parts makers, thus putting them in the class of parts to which the discussion in this series has been primarily devoted. The car or truck producer would seem to have little to gain in the near future from elimination of the vendor parts maker from the replacement field on such items for the reasons already outlined.

The car manufacturer who first makes the greatest and most lasting inroads on the replacement parts business which independents have been getting away from him, probably will be the one who spends a minimum of time and energy fighting about who ought or ought not be in the business; and who concentrates his entire thought and energy on going out to lick any and all competition on a strictly competitive basis.

To do this a profound change in mental attitude of the average passenger car executive would be essential.

Let's look at the market for replacement parts solely among the distributors and dealers of the Sennett Motor Car Co. Let's forget the possibilities for sale of original Sennett parts among independent repair shops; let's forget them for the moment because while such possibilities do exist, perhaps, they certainly will be harder to realize than those for business with Sennett dealers. If the Sennett Motor Car Co. can't get practically all of the business of the Sennett dealers, it surely isn't equipped to get any vast quantities of business from independent repair shops. So let's go to work on our own Sennett dealers first. Our general objective, however, is to make money from our factory parts sales.

The first thing we will have to do, probably, is to pull ourselves out of the whole feeling about the parts department and parts sales which has become a part of us through years of work with the Sennett factory. We have always thought of the parts and service division as something necessary to new car sales; we have always thought of our "original" parts as something the Sennett dealer ought to buy; we have always felt that he should be censored for not buying them.

Now suppose we do a to *volte face.*

Suppose we view our whole service and parts activity as a separate and distinct unit; as a self-sustaining entity; as a company within a company, charged with operations at a profit.

A Separate Company Might—

Just for psychological purposes let's visualize a separate company—a subsidiary, of course, of the Sennett organization—controlling parts inventories, parts pricing, parts merchandising, service promotion and every other phase related to parts or service on Sennett cars.

We'd probably have a general manager for that company; we probably charge him with full responsibility for showing adequate returns on the investment which we made in it. Under such conditions, what would that general manager be likely to do.

To begin with, he probably would analyze his market, item by item.

Then he would visualize all Sennett dealers as potential *customers.* (*Customers* are people whom we *sell* and serve; not people whom we censor and criticise for not buying from us. We might do that with employees, not with customers.)

Then he would probably:

1. Get organized physically and mechanically to provide quick, accurate service;
2. Get his parts priced competitively;
3. Go out and *merchandise* (using that word in its broadest sense) his products to Sennett dealers, recognizing them as customers for whose business he was competing with independent parts manufacturers.

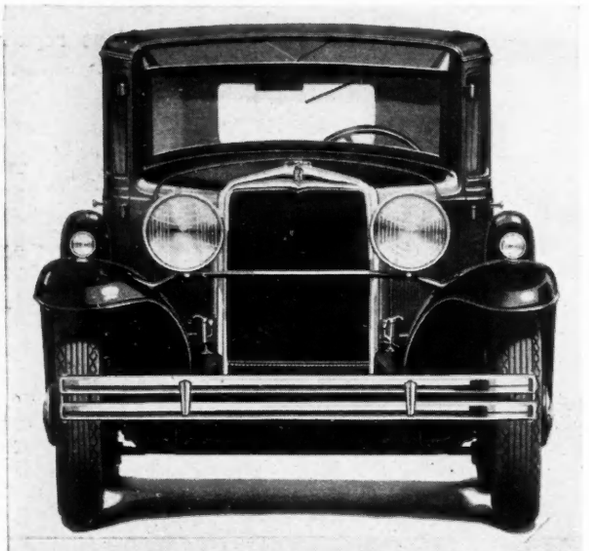
(Turn to page 917, please)

CAR manufacturers might well consider dealers as customers . . . then service these customers' needs - - - - - - -

MERCHANDISING methods of the independent parts makers should be studied . . . they have pyramided sales - - - - -

Hupp Adds Lower-Priced Century

New 90 hp. model is listed at $1,345-$1,490. Alloy pistons and four-point rubber engine mounting are features of the Century Six - - - - - - -



The Hupp Century Six (above), showing new radiator outline, fender parking lights - - - - -

Hupmobile Century Specifications

Prices

Century Eight	List Prices	Century Six	New Prices	Former Model "S" Prices
Commercial Coupe	$1,345		$1,145	$995
2-4-p. Coupe	1,395		1,195	1,095
5-p. 4-door Sedan	1,395		1,195	1,095
5-p. Phaeton	1,450		1,250	1,135
Convert. Cabriolet	1,450		1,250	1,110
2-p. Roadster	1,475		1,275	1,094

Open models have 5 disk wheels, semi-custom equipped. Other models have wood wheels. Open models have fender-well mounting of spare wheel.

Century Eight Mechanical Specifications

Wheelbase	118 in.	Carburetor	Dual Stromberg
Tire Size	5.50/19 in.	Fuel feed type	AC pump
No of cylinders	8	Electrical Units	Auto Lite
Bore and stroke	2⅞ x 4¾	Engine Mounting	Special, Rubber
Taxable horsepower	26.45	Clutch Type	Single Plate
Displacement	240.2	Make	Borg & Beck
Maximum b.hp.	87 at 3200 r.p.m.	Vibration damper	Coil springs
Comp. ratio	5.2 to one	Gearset make	Detroit Gear
Valve Arrangement	L-head	No. of speeds	3
Camshaft Drive	Morse Chain	Mounting	Unit
Piston Material	Alum. Alloy	Universals	Universal Products
No. Main Bearings	5	Rear Axle	Semi-floating
Crankshaft balanced	Yes	Torque medium	Springs
Vibration damper	Yes	Brakes	
Oil pressure to all bearings, including tappets and piston pins.		Service	Midland Steeldraulic
		Hand	Internal four wh.
Oil Cleaner	Yes	Steering Gear	Ross, cam and lever
Crankcase Ventilation	Yes	Shackles, Type	Rubber
Air Cleaner	Yes	Springs	
Temperature Control	Auto. Shutters	Front	1½ elliptic
			37¼ by 1¾
		Rear	52⅜ by 1¾
		Chassis Lubrication	Alemite

To fill a price gap in its line, the Hupp Motor Car Corp. has added a new car, the 90 hp. Century Eight, with prices ranging from $1,345 to $1,490, the lowest at which Hupp has ever offered an eight-cylinder car. Simultaneously the Hupmobile Century Six is being placed on the market, with prices ranging from $1,145 to $1,330. In addition to announcing these two new models, the Hupp Motor Car Corp. is putting into effect a number of new merchandising and dealer-relation principles.

The new eight will be fitted with bodies which are a development of designs that were used on previous Hupp lines, over which they are a distinct improvement. The large hood and the new radiator outline adopted on the Century Eight are characteristic also of the Six, giving the latter a more gracefully tapered front end, and the impression of increased size. In addition to the new bodies, the adoption of larger fenders, larger tires and a new running-board-covering material also contribute to improved appearance on the Six. This new covering (also used on the new Eight) is of the linoleum type of ribbed fabric, instead of rubber, and is said to be less likely to wrinkle than the latter.

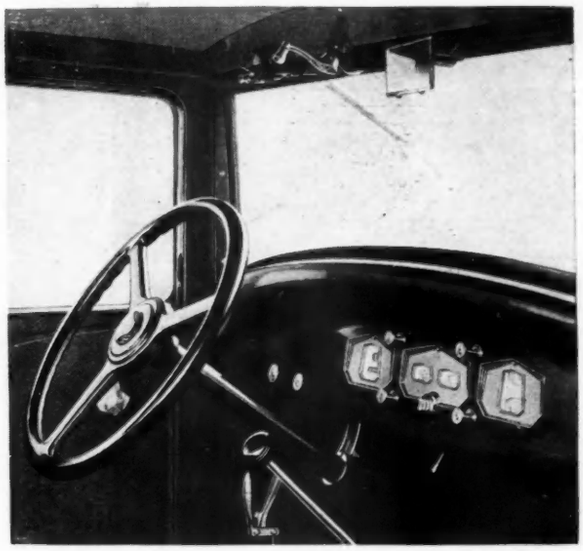
Inside the new Six are to be found further marked improvements. A heat indicator has been added on the instrument board; seats in closed models are now adjustable; sedans have arm rests and three curtains instead of one; the dome light switch has been moved to the door pillar for better accessibility. Upholstery is of better grade than formerly. Smoking sets have been built into the backs of front seats in the sedan. Toggle grips have been added.

Aside from the body changes, there are also a number of mechanical improvements in the Century Six. Outstanding, perhaps, is the adoption of alloy pistons, with longer skirts and increased length above the pin, as compared with the former cast iron type. In connection with their adoption, which naturally results in a considerably smoother engine, the cylinder barrels have been extended downward, and the connecting rods shortened slightly, while the compression ratio remains substantially the same. Tappets are now pressure-lubricated. Two compression and two oil rings are fitted to each piston, all ⅛ in. wide.

Four-point rubber mounting has been adopted for the Six also, with tension-type vertical mountings at

Eight to 1930 Line

By Athel F. Denham



Interior detail of the Century Eight, showing the three-spoke wheel and sloping windshield - -

the front. Formerly rubber was used at the rear only. Frame rigidity has been increased by widening the flanges over the entire length of the side rails, and by increasing the size of the front cross-member.

A tapered roller bearing of larger capacity has been adopted in place of the double bearings formerly used at the wheel ends of the rear axle. Midland Steeldraulic brakes are continued, but the drum size has been increased to 12 in. The hand-brake ratchet release is now of the spoon instead of the button type.

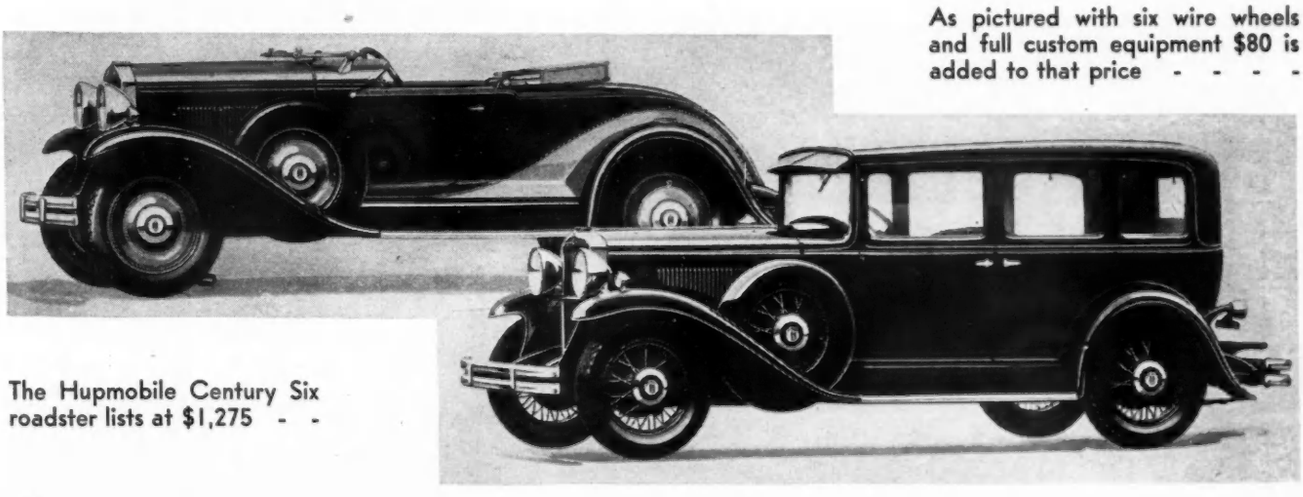
Front axles have a heavier center I-beam. Tires are larger in section. Gabriel double-acting hydraulic shock absorbers are now standard on the Century Six. Eight color combinations are available on all models.

Returning to the Eight, an example of the engineering developments found in it is the system of engine mounting. One of the drawbacks of the usual rubber-type engine rear mounting is that it decreases the efficiency of the rear end of the powerplant as a cross-member. In the Hupmobile Century Eight, however, although the engine is so well insulated in rubber that a grounding strip has to be used for the electrical circuit, there is a solidly mounted pressed steel cross-member carrying the rear end of the powerplant. This cross-member surrounds the clutch housing, but instead of bolting between flywheel housing and block, it is secured to milled flanges on the flywheel housing at four points, the clutch housing bolting solidly to the flywheel housing itself. Bonded rubber-insulated fastenings are used to fasten the flywheel housing to the cross-member. Compression type mountings are used at the front, but the mounting bosses at the frame rail slope down toward the center of the car at an angle of about 30 deg., which gives the same cradle effect as the rear mounting.

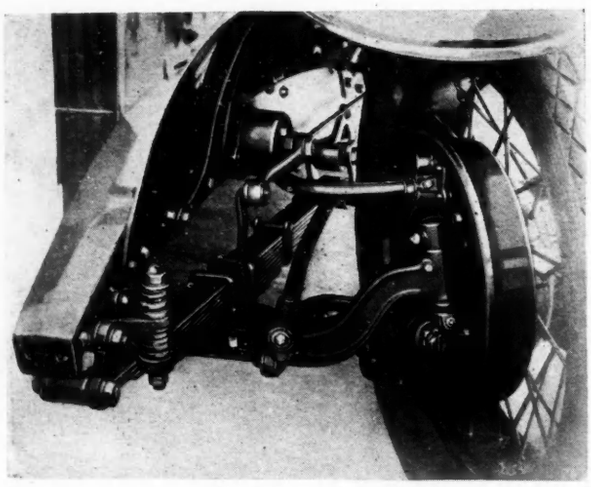
Another item which reflects the attention devoted to detail is found in the water pump. While the pumpshaft is integral with the fan shaft, the pump itself is not recessed into the block, but is mounted somewhat higher, projecting above the block to provide ample clearance for a good-sized fan above the fan pulley and vibration damper. The pump itself has a double, mechanical and packing seal. The packing is a plastic material, supplied in sticks and inserted in a drilled and tapped hole at the top of the pump housing. A fairly long bolt is then screwed into this hole, forcing the packing into the annulus around the pumpshaft. At both sides of the packing annulus is a tapered lead

The Century Eight Sedan, with standard wood wheels, lists at $1,395.

As pictured with six wire wheels and full custom equipment $80 is added to that price - - - -



The Hupmobile Century Six roadster lists at $1,275 - -



Front springs of the Hupp Century Eight are shackled at the rear.

At the front of the left front spring will be noted a new form of the shock eliminator adopted on other models last year

bushing, the taper being used so that the packing will press the bushing against the pumpshaft also, providing an additional seal.

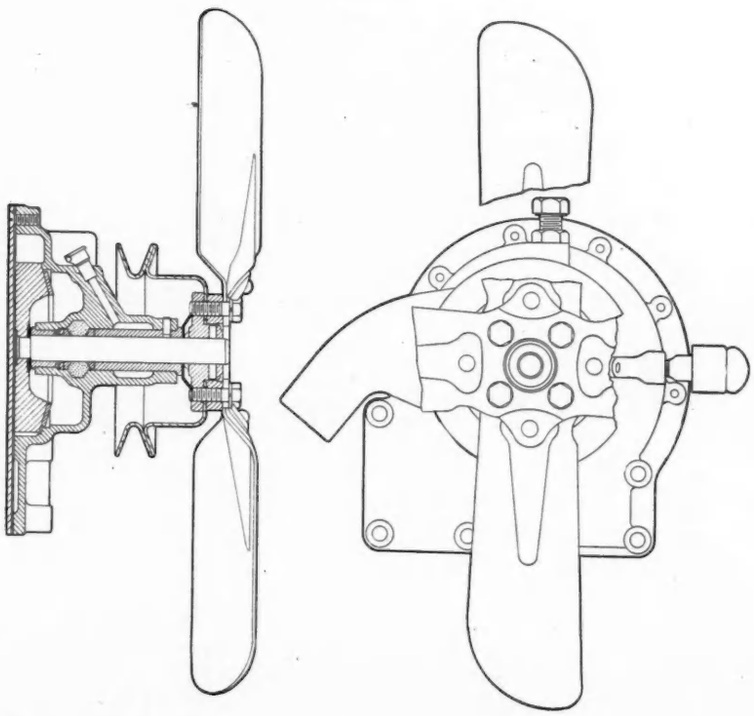
Pumpshaft bearings are graphited bronze, lubrication for the front bushing being obtained from an oil reservoir, while a grease connection is provided for the rear bushing. The rear bushing has its flanged face tapered, so that in wearing in it will also rapidly provide a mechanical seal for the pump. A three-legged spring is provided at the fan end of the shaft to render this mechanical seal more effective. While the engine is running the fan thrust also helps, although this is partially balanced by the impeller thrust.

A Dayton cog-type belt is used to drive the pump assembly, the belt tension being adjusted by swinging the generator in the usual manner. The crankshaft fan pulley forms an integral part of the flywheel of the torsional-vibration damper. This damper has a plate of rubber bonded to a flange mounted on the crankshaft, and to the flywheel and pulley assembly. Concentricity of the latter with the crankshaft is obtained by mounting the pulley assembly on a bronze bushing on the crankshaft. The advantage of this damper is that there are really no parts to get out of adjustment, the rubber doing all the work in damping out the torsional vibration.

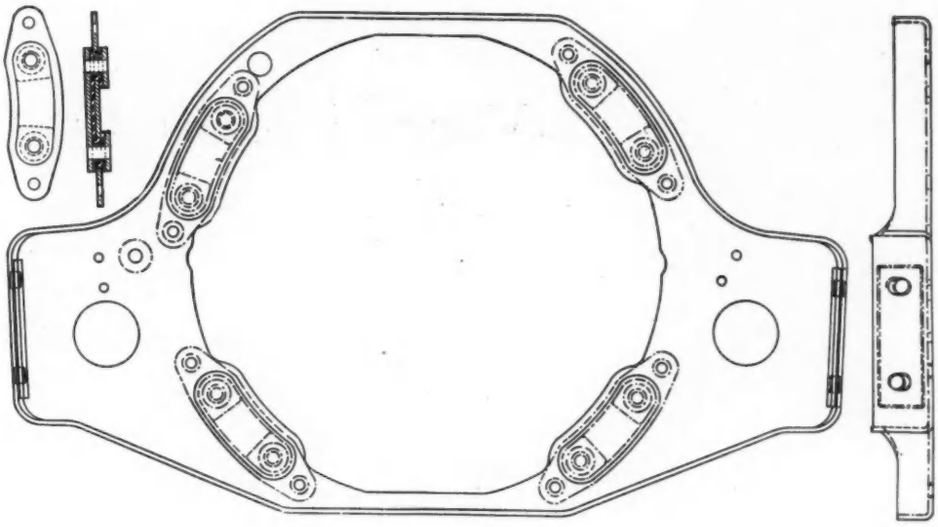
Two interesting details are readily noted on the carburetor side of the engine. The fuel line from the gas tank to the pump, instead of running straight forward along the frame side rail on the Eight, is carried over to the far side, up to the front of the engine, across, and back to the pump. The object is to keep the fuel line as far from the exhaust pipe and muffler as possible, thereby avoiding any tendency to produce vapor lock in the fuel line.

The second item is the absence of gaskets between the exhaust manifold and the cylinder block. These gaskets, as is well known, have a tendency to chew through as a result of the expansion and contraction of the exhaust manifold while warming up and cooling down. Hupmobile engineers found that by using a paste consisting of linseed oil and graphite, the manifolds could be attached directly to the newly machined cylinder block flanges, without gaskets or leakage, as is frequently done in steam engine practice. The paste not only provides a seal to fill up tool marks, etc., but acts as a lubricant to permit the manifold to "slide" on the flanges while expanding or contracting. There is, of course, sufficient clearance around the retaining studs to permit this relative motion to take place.

An exceptionally sturdy five-bearing counterbalanced crankshaft is used. The crankshaft-bearing caps are produced in an interesting manner. With a large diameter crankshaft like this one and the resultant relatively narrow caps, when the holes for the bearing-cap hold-down bolts are drilled there is danger that a slight amount of dirt on the contact face will throw these holes out several thousandths of an inch, causing misalignment of the bearings. To overcome this, all Hupmobile bearing caps (with the exception of the comparatively long one for the rear bearing) are machined in a single casting, milled, drilled, etc., and then sawed apart.

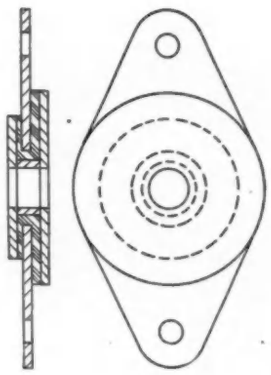


Section of Hupmobile Century Eight water pump, of interesting new design - -



Drawing of Hupp rear engine mounting plate, or cross-member, is bolted solidly to frame and rubber insulated from flywheel housing - - -

A detail of bonded rubber rear support block is shown at the upper left



Engine front support silencer block, used on the Century Eight at two points.

The actual mounting is at 30 deg. to the horizontal - - - -

Connecting rods are rifle-drilled for pressure-lubrication to the piston pins. Piston are of aluminum alloy and of Ray-Day manufacture, with an interesting method of locking the pin in the piston. Where the usual type of lock-screw is used in an aluminum alloy piston, tightening of this screw often throws the skirt of the light-weight piston out-of-round. Hupmobile gets away from this by using a locking screw which passes through the piston pin and screws into the upper half of the boss. The locking screw itself is of two diameters, smaller near the thread end, to permit it to readily pass through the drilled hole in the piston pin, and larger at the head end to limit the movement of the screw and piston pin after assembly. Since the effect of this locking method is to draw both upper and lower sides of the piston boss toward the pin, two precautions have been taken to prevent distortion. The piston pin is assembled with a 0.002-in. shrink fit, and the pin itself is reinforced internally at the end, where it is locked in the piston, by increasing the wall thickness.

The valve mechanism follows the usual Hupmobile practice; the tappets, which are pressure-lubricated, are of the finger type as on the larger Hupmobile Eight. A two-point chain drives the camshaft.

Automatic vertical radiator shutters are a valuable sales feature. The flanges to which the water jacket and valve chamber cover plates are secured are not finish-machined. Hupmobile engineers have found an unmachined surface together with a cork gasket to form a better seal than a finished surface. An engine heat indicator is mounted on the dash.

In addition to the mechanical pump mentioned, the fuel system includes a double carburetor, with dual manifolding, an air cleaner, a gas filter, a 15 gal. tank and a dash gage. An oil filter is standard also.

A coil spring torsion damper is built into the clutch driving plate. The transmission is a conventional three-speed type and drives through a Universal Products propeller shaft and joints. The rear axle is semi-floating and has a single large taper-roller bearing at each wheel, the same as that of the Century Six, thrust being taken at the differential.

Front axles and steering gear are conventional. Springs are mounted in Silentbloc rubber shackles, which eliminate the need for lubrication at these points. Front springs are shackled at the rear, and the left front spring is provided with a road "shock eliminator" at the front end, as on other Hupmobile Eights. Brakes are Midland Steeldraulics. Frames are tapered from front to rear and have six cross-members. The oil pan of the engine slopes down toward the rear, following the frame side rail lower edges, the object of this design being to facilitate air flow through the radiator. With the same object in view, louvers are stamped in the pan.

In the bodies are noted such details as fender-mounted parking lights, a foot-operated switch for depressing the headlight beams, chrome-plated lamps, mohair upholstery in the closed cars, with genuine leather in the open models.

Section of piston and rod assembly showing in detail pin-locking method used on both Century models of the Hupmobile

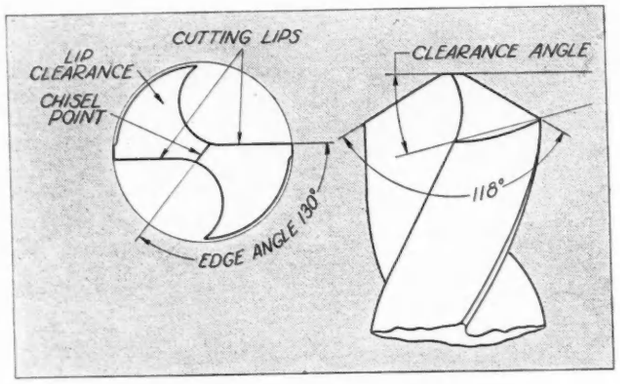


Fig. 1—Elements at the Drill Point

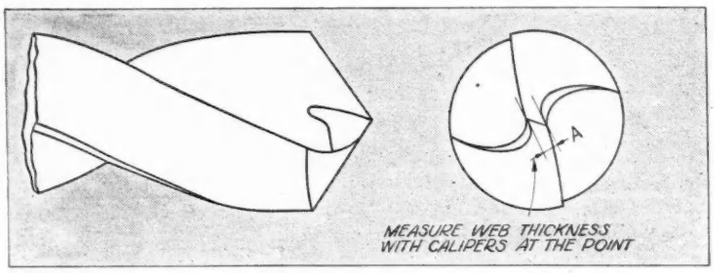


Fig. 2—The Drill Pointing Machine is used for thinning the points of two-lip drills after they have been correctly ground on the Drill Grinder

A short groove is ground on each side of the web of the drill, thereby reducing the flat between the cutting edges. If there is any variation due to a difference in depths of the flutes, this grooving equalizes the length of the edges. (See table of suggested web thicknesses for thinning)

Suggested Web Thickness for Thinning

Drill Size In.	Web Thickness A Sellers (minimum)	Whitman & Barnes	Drill Size In.	Web Thickness A Sellers (minimum)	Whitman & Barnes
1/2	.065	.067	15/16	...	.120
17/32	...	.071	31/32	...	.124
9/16	...	.075	1	.094	.128
19/32	...	.079	1 1/16	...	.135
5/8	...	.083	1 1/8	...	.143
21/32	...	.085	1 3/16	...	.150
11/16	...	.090	1 1/4	...	.158
23/32	...	.094	1 5/16	...	.165
3/4	.078	.098	1 3/8	...	.173
25/32	...	.101	1 7/16	...	.180
13/16	...	.105	1 1/2	.125	.188
27/32	...	.109	2	.156	...
7/8	...	.112	2 1/2	.189	...
29/32	...	.115	3	.219	...

Whitman & Barnes suggests thinning to 1/8 of diameter for drills smaller than 1 1/2 in. diameter and 1/12 of diameter for drills 1 1/2 in. diameter and over - - - - - - - - -

Mass Production

By Joseph Geschelin

BECAUSE twist drills in the commonly used sizes can be used on such an amazing variety of jobs, and are so well-nigh perfect when purchased, but little thought has been given to drill maintenance. Yet, maintenance is a serious consideration when it is remembered that a resharpened drill, if it is to produce good work, must be brought back to its original condition, reproducing accurately the scientifically determined proportions and cutting angles at the drill point. Although offhand it seemed a simple matter to get the facts about drill sharpening for the following study, it became apparent immediately that very little information is available. Further search reveals that the subject is not as elementary as it sounds since there are a number of factors that are not yet thoroughly understood. As a matter of fact, some of the elements entering into drill maintenance, as well as the design of the drill itself, are at present the subject of research in the laboratories of several universities.

Mass production demands sharp, accurately ground drills, particularly for those extremes of high production tools such as the three-way or four-way drilling machines and the portable electric drill. The study undertaken here makes evident the importance of correct drill grinding, reveals the sensitiveness and dependence of drill performance upon the proportions of the drill point and finally shows the absolute necessity of sharpening by means of a properly designed machine.

To be sure that we speak the same language, the terms used here have been conveniently standardized by labeling Fig. 1, which shows an axial and top view of the drill point. The elements with which we are concerned chiefly are: the cutting lips; the chisel point; the clearance angle; the edge angle, and the drill-point angle, which is the angle formed by the two cutting lips and has been standardized as 118 deg.

An examination and analysis of Fig. 1 unfolds the complexity of the factors at the drill point, their interdependence, and

Demands Maintenance of Original Drill Point

Maintenance of drill is serious consideration as resharpening must bring it back to its original condition, reproducing accurately scientifically determined proportions and angles

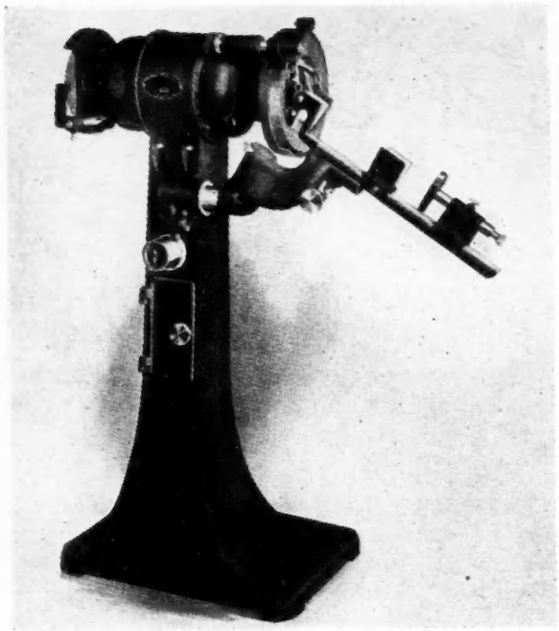
their effect upon torque, thrust, total load on the drilling machine, and drill endurance or interval between grinds.

Before plunging deeper into the subject, let us remember that we are concerned only with drill grinding and that the subsequent discussion refers only to the maintenance operations. Accordingly, we shall accept the commercially standardized proportions of new drills and will concern ourselves with the necessity for, and the elements involved in, maintaining these proportions. Drill sharpening entails control of the point angle, the clearance angle at the periphery and center, the edge angle, and the chisel point.

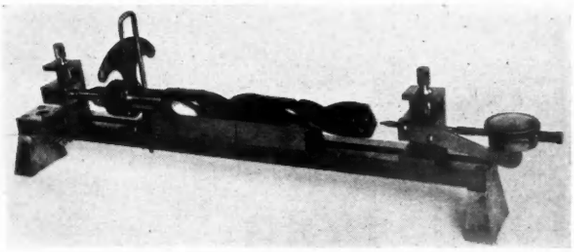
The problem of drill grinding may be resolved into two distinct steps, the first of which includes all of the operations except that of thinning the chisel point; and the second operation, commonly called point thinning, being concerned with reducing the thickness of the web at the chisel point as the length of the drill diminishes. The latter operation is not required as frequently as the first, nor is it necessary as soon because the effect of increased web thickness is not felt until after a number of grindings. Nevertheless, the importance of the operation must not be overlooked, for it has been determined experimentally that web thickness exerts a marked effect on the total thrust load on the driving head.

We are now prepared to examine the effect each element of the drill point; the effect of variation in these elements upon the total power or machine load; upon torque which is a close measure of total power required; upon thrust which constitutes an objectionable overload on the driving head, and finally upon drill endurance, or time between regrinds and consequent break-downs of the set-up. B. W. Benedict in the University of Illinois Engineering Experiment Station Bulletin 103 shows experimentally that for a commercial drill, torque represents from 98 to 99 per cent of the total power for 30 to 32 deg. helix drill, under average conditions. Note this—it is very important, because it shows that a new drill of standard proportions has been designed so that thrust on the drill spindle does not exceed 1 to 2 per cent of total power. It is obvious, therefore, that anything tending to increase torque will overload the machine by increasing power demand, while anything tending to increase thrust will constitute an undesirable overload on the drill spindle, the bearings and the driving heads. And it has been shown that a dull chisel point and insufficient center clearance may increase thrust 450 per cent or more.

No. 2A Drill Grinding machine, Wm. Sellers & Co., Inc., for twist drills from 5/16 to 3 in. dia., 90 to 130 deg. included angle - -



Style GST, Grand Rapids Drill Grinder, Gallmeyer & Livingston Co. The capacity of this model is 1/4 to 1 1/2 in. drills - - - -



A drill measuring instrument designed by Prof. O. W. Boston, University of Michigan, and used in connection with his twist drill investigations

This device measures accurately the lead or advance of the cutting edge so as to make sure each lip will take a chip of the same thickness. It also provides quick and accurate measure of clearance angles at periphery and next to chisel point - - - -

In general, Benedict concludes that torque, hence total load, varies with the point angle. If the drill is reground so that the point angle is less than 118 deg. the torque will increase; if more than 118 deg., torque will diminish. On the other hand, thrust increases sharply if the point angle is increased. Obviously, then, the drill point must be ground accurately to these requirements if the total load is to be a minimum.

Thrust is influenced largely by the web thickness or chisel point width and to a lesser degree by the clearance angles (providing it is greater than the feed helix), point angle and the edge angle. According to University of Illinois Bulletin 103, drill manufacturers recommend an edge angle of 135 deg., although they worked with an angle of 130 deg., and found this to be satisfactory. Incidentally, they found a sharp increase in thrust when the edge angle was less than 120 deg. Experience shows that the edge angle should vary according to the feed required, being less for light feed and greater for heavy feed. Again, thrust increases sharply above 125 deg. point angle.

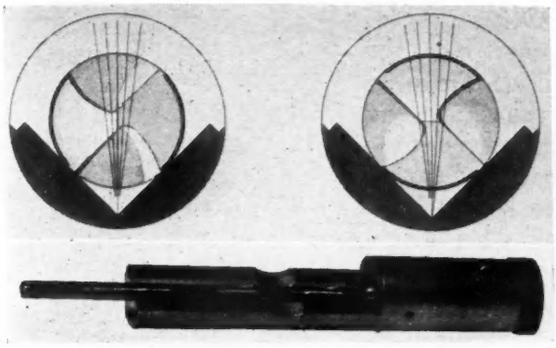
The clearance angle influences thrust, drill endurance, and the character of the chip, except when it is greater than the feed helix. F. W. Taylor and other experimenters recommend a peripheral clearance angle (i.e., at the circumference) of between six and seven degrees. This angle increases progressively from the periphery to the center and if a modern drill grinder is used the clearance at the center will be 12 to 15 deg., or approximately twice that at the periphery, in order to compensate for the greater feed helix at the center, thus in effect maintaining a constant actual clearance from the periphery to the chisel point. Drill manufacturers usually recommend a clearance angle of 12 deg., and the Cleveland Twist Drill Co. recommends 12 to 15 deg., particularly for softer materials.

Bausch & Lomb optical drill gage. This instrument provides a visual inspection of the drill point angle and alignment of the chisel point - - - -

Accuracy Vital

Quite probably this recommendation is necessitated by the fact that a good deal of the drill grinding still is done by hand, making it highly improbable that the proper clearance can be maintained. Yet accuracy is vital here because thrust is directly affected by clearance angle variations, increasing below 10 deg. and decreasing as the clearance angle is increased. On the other hand, a clearance angle of about 7 deg. at the periphery is found to be the best for all general purposes since it gives ample clearance and yet adequately supports the cutting edge. Well ground commercial drills will check closely with this.

Numerous tests have shown that although the width of the chisel point or the web thickness at the tip has very little effect on the torque or total power, it exerts practically all its influence on thrust, being responsible for 50 to 90 per cent of the thrust of a



Zeiss optical drill gage. Alignment and width of chisel point given by visual inspection on this type. (Courtesy George Scherr Co., Inc.) - - - -

new drill. It is quite probable that the importance of thinning the web at the point has not been realized fully because of the natural feeling that the effect of thrust is negligible.

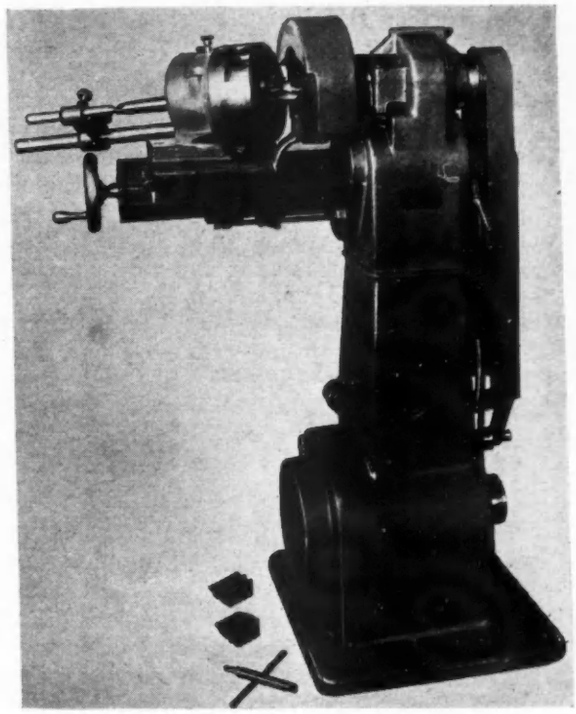
As a matter of fact, since it is true that the effective thrust power due to a new drill is only one to two per cent of the total load, the chisel effect of a new drill is seldom greater than about one per cent. But as the drill becomes shorter due to regrinding, the web gets thicker because it tapers from tip to shank. Then thrust increases sharply and may be easily four to five times that of a new drill. The width of the chisel point and the edge angle are interrelated, but for practical purposes only web thickness need be considered in the point thinning operation. Accordingly drill thinning is a necessary but precise operation, since it must reduce web thickness at the point by cutting into the lip clearance without interfering with the cutting edge.

Generally the object of the thinning operation is to produce the same width of chisel point as on a new drill, and in Fig. 2 are shown the recommendations of Wm. Sellers & Co. and Whitman & Barnes as being indicative of good practice.

Changes in Proportions

Drill endurance which is a measure of the life of the point, between regrinds, is extremely sensitive to changes in the drill-point proportions and demands accurate control of regrinding. Qualitative experiments show clearly that the necessity for regrinding is increased if the clearance angle decreases below about 5 to 6 degrees and is further increased with variations in the point angle. In fact, if the point angle is ground greater than 118 deg., the life of the drill is materially decreased.

Total power on the machine is increased as the drill becomes dull and, as has been already pointed out, it is influenced more markedly by the factors tending to increase torque, than by those tending to increase the thrust. It is also vitally interesting to note Benedict's suggestion that the power saved by a properly ground drill may be greater than the effect of first

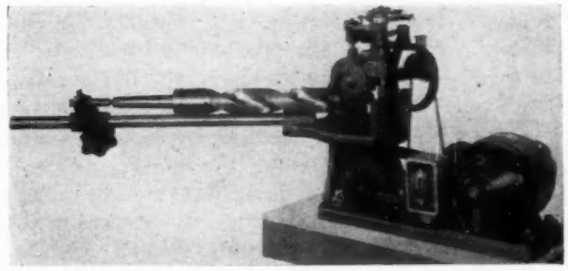


Oliver Drillpointer, Oliver Instrument Co. In this grinding machine, the drill is aligned for grinding by means of a setting gage - - - - - - - -

drilling a pilot hole, again demonstrating the necessity for accurate control of the grinding operation.

So far we have discussed only the effects on power demand and overloads on the drilling machine. Other elements of equal importance can now be considered. For example, if the clearance angle is too great, the edges of the cutting lip may break down. Again, the character of the work depends entirely upon the accuracy with which the drill is ground.

In hand grinding it is difficult if not impossible to have the chisel point at the exact center and to maintain accurately the angle of both cutting edges. If the point is central, but the cutting edges are ground at different angles, the drill will bind on one side, only one lip will do the work and the hole will



Sellers drill pointing machine for web thinning. Drills are held by a special two-jaw chuck - - - - - -

be larger than the drill size. The same effect will obtain if the cutting lips are ground with equal angles, but are of different lengths because the chisel point is off center. If both conditions are combined in a poorly ground drill as has frequently occurred, the result will be a larger hole and a terrific strain on the drill and the driving mechanism. Drill thinning too requires accurate control, for if the point is made too thin there is a possibility of splitting the end of the drill. For this reason it is a very difficult operation to perform by hand.

Although it is not generally known, drill thrust induces fatigue in working with portable drills. With a new drill, thrust is negligible. But as the drill dulls, thrust increases, and fatigue becomes induced without anyone realizing its source.

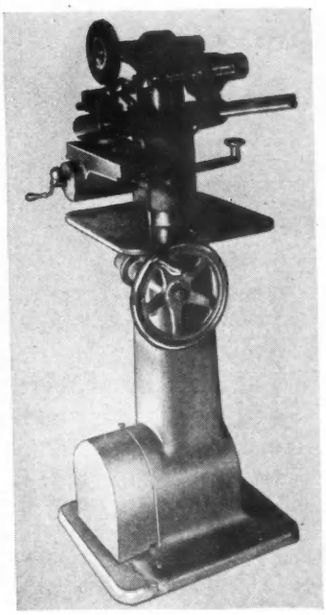
Hand Method Unreliable

Production men and experimenters who have devoted considerable thought to the drill problem, are convinced that the hand method of grinding and point thinning is expensive, wasteful of drill material and unreliable, and consequently has no place in the modern machine shop. True enough, there are mechanics capable of turning out a well-nigh perfect drill-point job. However, they are usually employed by the drill manufacturer and certainly are not the general purpose worker usually employed in the small-tool stores room of an automotive plant. A good drill grinding and drill pointing machine will provide this worker with the means for maintaining drills of the same quality as turned out by the drill manufacturer.

In this connection it is interesting to note the comparisons that have been made between hand grinding and machine grinding. Benedict tried this in connection with his experiments and reports that "to compare the average accuracy of hand grinding with machine grinding, a few one-inch drills were ground by good mechanics and measured. In no case was the hand-ground drill perfectly ground, the contour of the two sides being different, even when the angles and lip lengths were nearly the same. It was interesting to note that almost invariably the included point angle was made about 110 to 112 deg. instead of the standard 118 deg." He also finds that with hand grinding it is almost impossible to get accurate results on drills larger than $\frac{3}{8}$ in. diameter. According to O. W. Boston, it is wholly impossible on small drills. Again, Benedict observes that a perfectly ground drill will perform 40 per cent more work between grindings than a hand-ground drill and that the amount of metal removed at each grinding will be less. He concludes with the statement that perhaps no tool is so difficult to grind by hand, nor so easy to grind accurately by machine.

So much for a general comparison between the traditional hand grinding and the more accurate method of machine grinding. It is agreed that for general purposes a new drill which is perfectly adapted to the work requires no other preparation. Accordingly the function of the drill grinder and point thinner is chiefly that of maintenance and it performs an invaluable job by constantly reproducing drills similar in quality to new ones.

Oliver point thinner. Here the drill is mounted in the sleeve and located under the wheel by means of a hand wheel-and-balance handle - - -



However, a valuable supplementary function of the drill grinder and point thinner lies in its ability to produce special drill forms for unusual conditions, particularly when drilling very tough steels or soft non-ferrous metals. For example, W. W. Nichols, chairman of the A.S.M.E. committee on cutting metals, cites the following personal experience: "With reference to the increase in production in drilling by thinning the drill point, in one plant in which this was done, 28 holes per grind were produced as the drill was originally ground and after experimenting with various forms of point thinning, this was increased to 220 holes per grind with an average of 178. This work was upon front axle I beams containing a high percentage of nickel." Again, the Cleveland Twist Drill Co. reports that in some shops thousands of small holes 0.013 in. in diameter and 7/16 in. deep in brass are being drilled without difficulty by carefully grinding the drill points at regular intervals.

Frequent Grinding Desirable

Accurate grinding at frequent intervals is also desirable for automatic drilling machines where the object is to produce small compactly rolled chips which can feed readily through the flute. Here is another angle to consider, inasmuch as the quality of the drilled holes, particularly on automatic operations, is entirely dependent upon the character of the drill point. Another important function of the drill grinder is to provide matched sets of drills for a multiple-drill set-up, of uniform length and uniformly sharpened and thinned at the drill point. This is very valuable where a series of identical holes are desired, since it obviates the necessity of adjusting individual spindles. It is especially interesting to observe how well the drill grinding equipment fits in with the current practice of centralizing small-tool stores and maintenance, since it will permit the

tool crib attendant to perform the dual function of stockkeeper and tool maintenance man.

And as an adjunct to this machine equipment the market affords optical drill gages, two of which are illustrated here, which provide a fast check of the drill point and chisel point without resorting to any mechanical measuring device. These gages may be used in inspecting new drills, sorting out drills for salvage, checking the grinding operation, and finally for testing the drill before it is issued to the shop.

It is obvious that perfectly ground drills are essential today with the growing use of automatic drilling machines having 60 to 80 spindles and the demand for accurate work. Certainly it is a gross economic waste to pay for increased power and to permit overloading of motors and driving heads when these conditions may be so easily controlled by grinding the drill accurately by machine.

Finally the effect of thrust on the drilling machine cannot be overestimated. With well-ground drills it is negligible; with dulled drills it is definitely harmful to the bearings and the feed-drive mechanism which are designed for average service conditions.

Bibliography

Power Required to Drill Cast Iron and Steel, by O. W. Boston and C. J. Oxford.

An Investigation of Twist Drills, by B. W. Benedict and W. T. Lukens, Bulletin No. 103, University of Illinois, Engineering Experiment Station.

An Investigation of Twist Drills, Part II, by B. W. Benedict and A. E. Hershey, Bulletin No. 159, University of Illinois, Engineering Experiment Station.

Handbooks for Drillers, Twelfth Edition, The Cleveland Twist Drill Co.

Helical Angle of Twist Drills, by B. W. Benedict.

Grinding Machine for Drills, Wm. Sellers & Co., Inc.

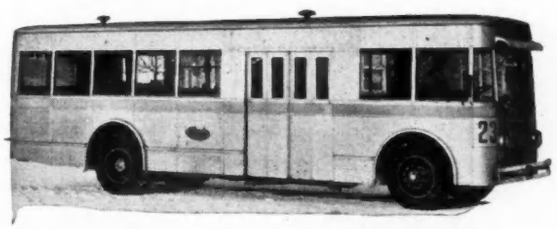
Duralumin Shapes Used in Norwegian Bus

THE accompanying photographs show a bus recently built by A/S Stroemmens Verksted, Stroemmen, Norway. The bus was designed by Alf Ihlen, president and engineering director of the company. Ten of these buses were built for the Oslo Street Car Co. and placed in service in November, 1929.

The bus has no frame properly speaking, the walls of the body forming the supporting members. This type of construction, in conjunction with the use of duralumin (ST 17) shapes resulted in a saving in weight of 3300 lb., we are informed. In order to make the fullest use of the floor space for carrying passengers, the engine is installed under a double seat at the left side of the bus.

A double folding door comprising one entrance and one exit door is operated by compressed air. Passengers enter through the front half of the folding door and advance along a directing rail toward the driver, where the automatic fare box is located. Ordinarily the driver will start the bus as soon as all the passengers have entered, the passengers occupying the entrance passage leading toward the driver, and later place their tokens in the fare box while the bus is in motion. This arrangement of the doors is said to speed up the bus materially. The ten buses referred to operate in the central part of Oslo and thus are compelled to make frequent stops. These buses are equipped with Hall-Scott six-cylinder 110 hp. engines. The clutch is of the single-plate type and both front and rear wheels are fitted with air brakes.

Following are some of the chief dimensions of the bus: Maximum length, 28 ft.; maximum width, 90⅝ ft.; wheelbase, 198 in.; turning radius, 28 ft.; tires, 38 by 9 in. balloon; with twin wheels on the rear axle.



Stroemmens aluminum bus body built for the Oslo Street Car Co. - - -

Willys-Knight Model Has Increased Power

THE Willys-Overland Company, Toledo, Ohio, announces the Willys-Knight Model 87, which is equipped with a six-cylinder 2 15/16 by 4⅜ in. Knight sleeve valve engine. This is the same size engine as used on last year's Model 70B. The compression ratio has been increased from 5.5 to 5.88 to 1, and the output is now 55 instead of 53 hp. at 3000 r.p.m. Prices range from $975 to $1,265.

Body models include a coupe, coach, standard sedan, roadster, touring car and de luxe sedan. Wire wheels are available for all models and spare wire wheels are mounted in front fender wells. On the de luxe sedan wire wheels are standard equipment. Four-wheel, two-shoe Bendix brakes are fitted. The frame is of alloy steel, the side channels being of 9/64 in. stock, 5¼ in. deep and with 2 in. flanges. The 17-in. steering wheel is of hard rubber with a steel center. The steering gear is of the semi-reversible type, with a gear ratio of 11 to 1.

The speedometer, oil gage, heat indicator, ammeter and electric gasoline gage are attractively grouped on the instrument panel, while the hand throttle, spark control, heat control and choke are on the dash within easy reach of the driver. Dash lighting is indirect.

British Fluid Transmission Devices

"HYDRAULIC TRANSMISSIONS" to us generally mean an equipment comprised of a pump driven by the engine which delivers fluid under pressure to one or more hydraulic motors geared to the road wheels, changes in torque multiplication between engine crankshaft and road wheels being effected by varying the stroke of the pump.

Hydraulic devices recently experimented with in England—two of which are discussed here—are different, however, and are described perhaps best as the reaction type.

Fluid, set in motion by a member carried on the crankshaft, impinges against vanes or buckets on a member secured to the driven shaft, passing either directly from the buckets of the driving member to the buckets of the driven member, or else through channels in an intermediary fixed member which modifies the direction of flow of the liquid.

The first type is known as an hydraulic-drag mechanism, in which the torque on the propeller shaft is at all times the same as that of the crankshaft; in the other, non-rotating but adjustable vanes serve as reaction members and permit of additional torque on the driven shaft, making this device a torque converter.

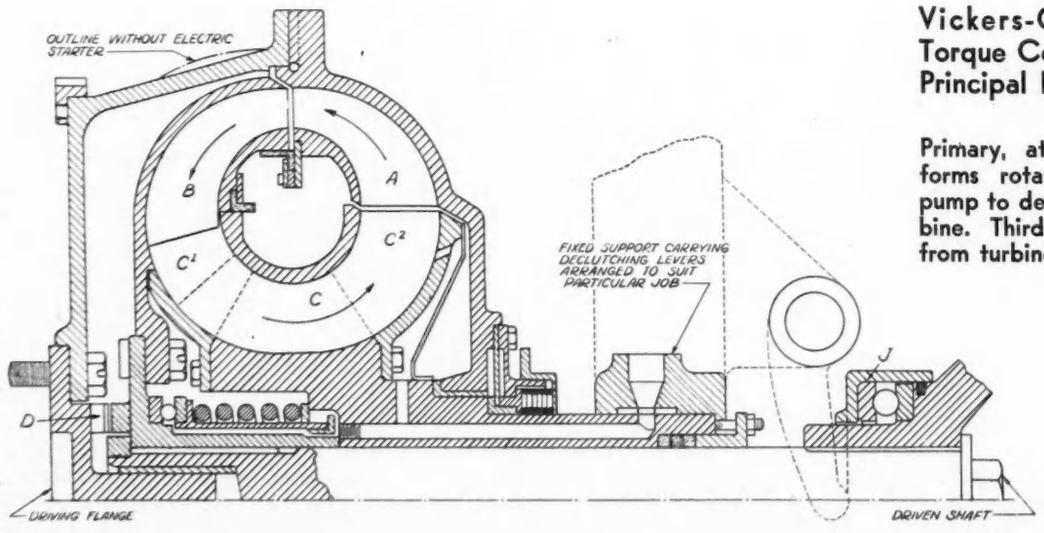
Daimler installs hydraulic clutch mechanism, and Vickers experiments with special torque converter - - - - -

THE Daimler Co. of Coventry has adopted a form of hydraulic coupling to displace the usual clutch forming a unit with the flywheel. A single-plate clutch is provided as well, but is a much smaller unit than usual, separated from the flywheel and used only for changing gear, not for starting and stopping.

The new device, termed the Daimler fluid flywheel, enables the car to be started on high gear (after the latter has been previously engaged and the clutch pedal released) by merely depressing the accelerator pedal and releasing the brakes. On the level, with the engine running at idling speed, the car may be left in high gear and the brakes "off" and yet it will not move. Illustrations of the actual design cannot be shown at present, owing to the patent situation.

The flywheel forms an oil chamber within which are two parts moving independently and constituting the driving and driven members, the former being attached to the casing. The driven member is flange-fixed to a shaft running back to the small cone clutch and a four-speed gearset. The two internal members resemble annular troughs, cup-like in section and face to face, and are divided into a large number of cells by radial webs. A small gap separates the two members, so that the driving one may rotate freely in relation to the other.

Assuming the car to be stationary and the engine running, rotation of the driving member by the engine causes the oil in its cells or cups to flow toward their outside periphery. From there, as the driven member is still stationary, the oil flows past the outside periph-



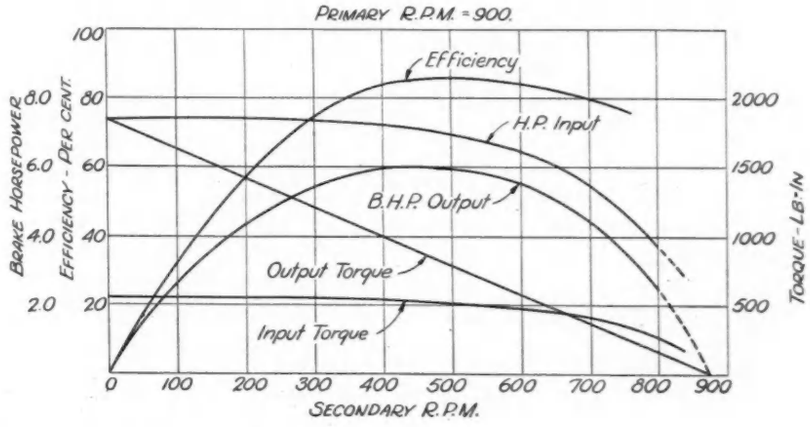
Vickers-Coats Hydraulic Torque Converter Has Three Principal Elements - - - -

Primary, attached to crankshaft, forms rotating casing enclosing pump to deliver fluid to drive turbine. Third element returns fluid from turbine to pump - - - -

Are of the "Reaction Type"

By M. W. Bourdon

ery of its cups, through them, and past their inside periphery to the inside periphery of the driving member cups, and from there back again to their outside periphery. In other words, the oil starts on a circulatory motion between the cups of driving and driven members. In passing from the webs of the driving to those of the driven member, the oil is retarded in velocity and therefore releases kinetic energy, which sets the driven member in motion when the engine speed is high enough. Since, even when the driven member has attained full speed, the load on it causes it to lag behind the driving member, the centrifugal forces in the latter are always larger than those in the driven member, so that the circulatory motion of



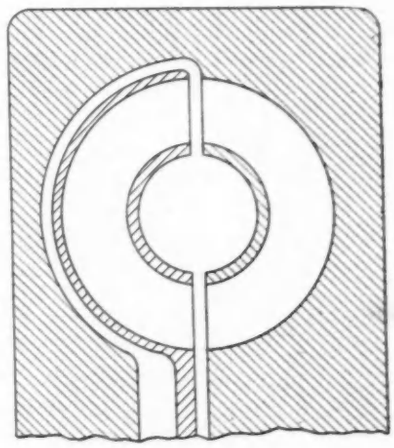
Torque, output and efficiency curves of Vickers-Coats hydraulic torque converter

the oil, and therefore, the transmission of power, from the one to the other is always kept up.

At ordinary speeds the oil needs but little retardation to develop the required driving torque, hence the lag or "slip" between the driving and driven members is insignificant, about 2 per cent. At low engine speeds, however, the "slip" can become 100 per cent, so the car will not move. As the car begins to move the slip diminishes so rapidly that exceedingly smooth starting and low speed running is obtained without prejudice to normal running efficiency.

For gear-changing purposes, there is, as mentioned, an ordinary friction clutch between the fluid flywheel and the gearbox; this clutch is much smaller and lighter than usual, because it does not have so much work to do.

At present, the Daimler fluid flywheel is available



Daimler Fluid Flywheel

This unit enables car to start on high gear when driver depresses accelerator and releases brakes.

With car in high gear and with engine running at idling speed, the car will not move if standing on the level, although the brakes are not set - - - - -

in only a special model of the Double-Six "30" chassis, at an extra cost of £50.

The Vickers, Sheffield, branch of the English Steel Corporation, has introduced a turbine transmission for automobiles, known as the Vickers-Coats hydraulic torque converter, and has applied it to a passenger car for demonstration purposes.

It is a compact and self-contained unit, about as large as the flywheel and clutch it displaces, and consists of three main elements—primary, secondary and stationary. The primary element, attached to the crankshaft, forms (a) the rotating casing that encloses the whole of the mechanism and (b) a centrifugal pump delivering fluid to a turbine. The latter is the secondary or driven element and is attached to a flange at the front end of the transmission shaft. The third element returns the fluid from the turbine to the pump.

Both the primary and the secondary elements have fixed vanes secured to their inner peripheries; the primary delivers the fluid to the vanes of the secondary element, the latter in effect being a turbine to which a rotary motion is given by the fluid impinging upon its vanes.

The third and stationary element is an annular member having two sets of vanes; the units of the first

(Turn to page 917, please)

JUST AMONG OURSELVES

Advertising Men's Average High—What of Engineers?

ADVERTISING is a great business for young men—particularly in Detroit, it would seem. The average advertising man in Detroit is about 34 years old and earns $6,767 a year—at least he was and he did in 1928, according to a recently published survey made by the University of Detroit with the cooperation of the Adcraft Club of that city. The study covered 500 men engaged in advertising work in Detroit.

Thirty-five per cent of the group had graduated from college, although more than 50 per cent had started into the realms of higher education. The average number of years experience in advertising was eight and the average years of experience outside of advertising.

A similar study of engineers would be interesting for comparison.

Wholesale Service Units Profitable to Jobbers

IT is a good guess that further development of these wholesalers of service work (usually service departments of general and parts wholesalers) will be an added factor in helping the sale of parts manufactured by independents.

Such wholesalers not only continue to merchandise parts vigorously as in the past, but use a number of parts in doing the repair jobs which they get into their own shops.

Accurate figures as to the volume of such wholesale service at present are not available, but there is every indication that it is continuing its growth which started several years ago. And such surveys as have been made to date indicate that these service departments have almost always proved profitable to the jobbers who have installed them.

Confirmers of Doubts—Belittlers of Enthusiasm

"THE thing I find about committees," wrote Alfred Harcourt, publisher, recently, "is that they always confirm each other's doubts and very rarely each other's enthusiasms."

Dealer and Service Shop Best Merchandising Factors

THE car manufacturer has long recognized wholesalers of various kinds handling independent parts as competitors of his distributors and branches for the replacement parts business of his dealers.

The car manufacturer has begun to recognize, too, that the greater amount of service work his own dealers do, the better is his chance of getting an increased share of the replacement parts business of the country.

But there is such a thing as "wholesaling service" as well as parts. Three kinds of maintenance wholesalers are in existence today: the engine rebuilder, the service station of the general jobber and the service station of the parts jobber. All three get service work from dealers, do the work, sell the job back to the dealer at a profit. Finally the dealer resells the job to his customer at a profit.

The dealer remains, and always will remain, along with the independent repair shop, the merchandising contact with the customer.

A Few Gardenias Might Ease Our Staccato Lives

WE have just stolen ten minutes from the midst of a busy day to read from start to finish the leading article in the June issue of "The Austin Magazine," a monthly published by the Austin Motor Car Co. in England, which carries advertising and is sold to car owners at 4d per copy. The article was written by John Drinkwater; it discusses the effect of landscape on individual human character.

The article in itself appeals to us as the finest, most delightful piece of writing we have ever read in any strictly automotive magazine. But that is beside the point, at the moment. After enjoying it to the full, we sat back and tried to visualize it as a part of one of the American owner-house organ type of publications. The lazy, casual flow of its poignant diction; the impractical character of the theme itself; the utter absence of dogmatism coupled with a thoroughly positive presentation of a definite conviction—all of these qualities would seem just a bit out of place in a typical telegraphic, staccato, American presentation.

The distinctions noted, to a large extent, perhaps are inherent psychological differences between the methods and objectives of the British and American automotive industries; of British and American people, perhaps. Over here we have gained immeasurable benefits from the strenuous application of those qualities which in us are dominant. Possibly we could find a place for a few more of these gardenias in the button-hole of business.—N. G. S.

L. G. S. Clutch Facilitates Gear-Shifting at Any Speed

Change-speed accomplished, without declutching, by means of free-wheel mechanism. Maker's tests show increased fuel economy and reduced engine wear - - -

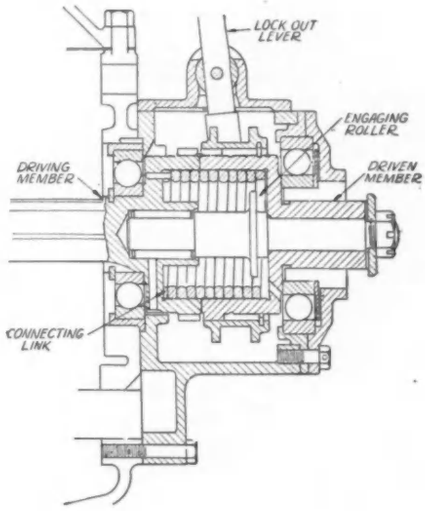
By W. K. Toboldt

AN unusual over-running clutch mechanism, which, because of its simplicity and small space requirements, is finding application in many fields, has been developed by the L.G.S. Manufacturing Co., Indianapolis, Ind. In the automobile it can be designed to be used as a starting-motor drive, to replace the differential, as a fan drive and as a free wheel device. The latter produces the same effect as coasting with the transmission in neutral and may be compared to the familiar bicycle coaster-brake without the brake action. In Europe, free-wheeling has attained considerable popularity but it is little known in the United States.

The L.G.S. Clutch consists of three essential parts: The driving member, the driven member and the connecting link. The latter is a helical spring, the outer surface of which has been accurately ground. As shown in one of the illustrations, the connecting link fits inside of the cylindrical driving and driven members.

The clutch is available in several different types, one of which is known as the ratchet type. In this design the spring connecting link is ground a few thousandths of an inch larger than the internal diameter of the driving and driven members. When the driving member is rotated in the opposite direction to the turns of the spring, the spring will be wound to a larger diameter (because of the friction between the end of the spring and the driving member) until it binds in the driven member, causing it to rotate. When the driving member is rotated in the same direction as the turns of the spring connecting link, the tendecy is to wind the spring to a smaller diameter so that slippage will take place, power will not be transmitted and the driving member will run free.

The initial friction between the end of the spring and the driving member produces a pressure between the spring and the driving member at a point further along the spring. This in turn is added to the initial pressure, causing greater friction, and in this way the building up of friction and pressure increases



L.G.S. over-running clutch, installed between the transmission and the propeller shaft, producing free wheeling in all transmission speeds - - -

A lever is provided to lock out the device when driving in reverse or whenever desired - - - - -

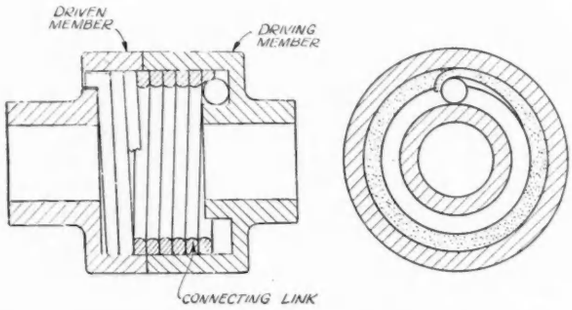
very rapidly. In fact, as much as 12,000 times, in six coils of spring, it is said. According to the manufacturers, this may be determined by the formula

$$P = pe^{f\theta}$$

in which P is the total torque capacity of the spring clutch

p is the total torque applied to the free end of the spring
e is 2.718
θ is the number of turns of spring in radians
f is the coefficient of friction.

Another type of L.G.S. Clutch while similar in principle differs in detail. In this design the helical spring is ground to a diameter several thousandths of an inch smaller than the internal diameter of the driving and driven members, an engaging members is included in the design and one end of the spring is attached to



Illustrating the principle of one type of the L.G.S. clutch

The driving (right-hand member) and driven members are cut away to show the spring connecting link, one end of which is attached to the driven member - - - -

the driven member. One of the illustrations shows this type with a ball engaging member. Turning the driving member in one direction causes the ball type engaging member to wedge between the end of the spring and the hub of the driving member. (This forces the end of the spring) into contact with the inner surface of the driving member. The resulting friction builds up, in the same manner as the ratchet type, tending to unwind the spring to a larger diameter until it contacts the entire inner surface of the driving and driven members, causing both members to rotate as a single unit.

Device May Be Locked Out

When used as a free wheel device on an automobile it can be attached so that free wheeling may be obtained on all forward speeds or in the intermediate speeds only, a lever being provided to lock out the device when driving in reverse or whenever desired.

The writer drove a model A Ford equipped with an L.G.S. free wheel device, installed between the transmission and the propeller shaft. The most noticeable feature was the ease of shifting gears. After the car was moving it was not necessary to use the main clutch when shifting gears. It was only necessary for the driver to remove his foot from the accelerator pedal, bringing the engine down to idling speed (the L.G.S. Clutch permitting the car to coast) and change the gear set lever to the next desired speed. Shifting upward or down in the change-speed range was made with equal facility.

From 15 to 25 per cent better fuel economy is claimed for cars fitted with the L.G.S. free wheel device. Naturally the increase in economy depends on the driver and on the character of the roads.

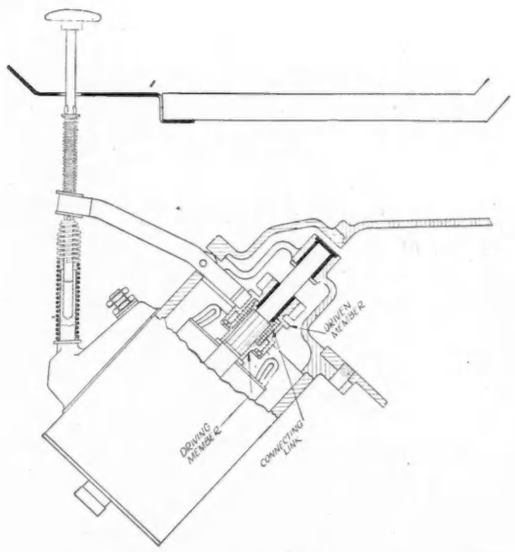
In addition to the improved gear shifting and increased fuel economy, advantages claimed for free-wheeling include quietness of operation while coasting; less oil pumping, resulting in better oil economy and less carbon accumulation; reduction of reverse torsional strains on all rotating parts, such as clutch, transmission, propeller shaft and rear axles assembly, as there is no reversal of strains when the car speed is greater than the engine speed and reduced engine wear because the engine is idling while coasting.

This latter advantage was shown in a striking manner on a test run on which the car was fitted with two speedometers. One was attached to the propeller shaft and the other to the main shaft of the transmission. In other words, the L.G.S. Clutch was mounted in the drive between the speedometers. With the free wheel device locked out, both speedometers indicated the distance traveled. But with the L.G.S. Clutch functioning, one speedometer showed the actual distance traveled, while the other showed the distance the car would have gone for the number of revolutions made by the engine. When the car had traveled 19.5 actual miles, the other speedometer showed a distance of only 16.5 miles. A saving of three miles of wear and tear on the engine, and the saving would have been greater in hilly country.

Complies With State Laws

The disadvantage usually cited when speaking of free-wheeling is that it is necessary to depend entirely on the brakes when stopping or descending hills. However, with the L.G.S. Clutch, the device can be locked out at any car or engine speed. Some states have laws prohibiting coasting, but inasmuch as cars equipped for free-wheeling are also provided with a lock-out, it would seem to eliminate difficulties from that source.

The mechanism designed for the Ford car has a spring 2⅛ in. in diameter and 2 in. long and has a capacity of 500 lb.-ft. Because of its small size it can be installed within the transmission second and high main shaft gear so the gear is splined to the shaft through the clutch. This arrangement will provide free-wheeling in second and high speeds only. It can also be installed between the engine and the rear wheels.



Because of its small size, the L.G.S. clutch can also be used as a starting motor drive

Here the pinion is mechanically actuated and the spring connecting link is expanded by a ball type engaging element - - -

S.A.E. hears Herbert Chase discuss the trend toward ease of operation in three and four-speed transmissions

Gearsets Designed for Quietness

IN a paper entitled Comments on American Passenger Car Gearsets, Herbert Chase of The American Machinist discussed mainly the newer three and four-speed transmissions with quiet next-to-top gear at the summer meeting of the S.A.E. He said automotive engineers were generally agreed that in at least two respects gearsets are in need of improvement, namely, ease of shifting and quietness of operation.

While most changes in gearset design in recent years have been along these lines, other changes have been of a more radical nature, and there exists a diversity of opinion with regard to them. The most important of these relates to the number of changes of gear. This is a somewhat involved problem, as it affects the type and size of the engine to be employed, the rear-axle gear ratio, the design of other units, such as the clutch, propeller shaft and universal joints, the weight of the car, and its salability.

Mr. Chase classified the various passenger cars on the market at the present time, with respect to engine power, number of gear speeds and rear axle reduction ratio, as follows:

First—Cars combining a relatively large but comparatively low-speed engine with a three-speed gearset and a small axle-reduction.

Second—Cars incorporating a moderately small, relatively high-speed engine, a small axle-reduction and a four-speed gearset intended to keep the engine running at low speed most of the time.

Third—Cars incorporating a moderately small, relatively high-speed engine, a three-speed gearset and a rather large axle-reduction.

Fourth—Cars having a medium-size engine of fairly high speed, a four-speed gearset and a rather large axle-reduction.

Fifth—Cars combining a large, relatively high-speed engine, a three-speed gearset and a rather large axle-reduction.

Quiet in Next to Top

Easier shifting and quieter operation in next-to-top speed appear to have been attained by the use of the new four-speed transmissions, but some engineers of standing still have to be convinced that operation is any less noisy than that of well-made conventional types. Quiet operation and easy shifting can be and are realized in some three-speed gearsets to the same extent as in the four-speed variety.

Other advantages said to be realized by American four-speed gearsets now in use include:

1. Lower engine-speeds, with consequent decrease in engine noise and vibration, especially at high car-speeds, and less fatigue in driving
2. Fewer engine revolutions per mile, with resulting decrease in engine wear and friction losses
3. A smaller reduction in rear-axle gears, which consequently are smaller, lighter, cheaper and quieter
4. Lower propeller-shaft speeds, resulting in less whip and noise, or permitting the use of lighter and less expensive parts
5. Improved fuel economy, resulting from a better power-factor, and lower oil consumption
6. Ability to accelerate more rapidly without excessive gear noise in the next-to-top speed
7. Shorter steps between gears and a lower low-gear for emergency use
8. General excellent performance in third speed in traffic.

Manufacturing Problem

Mr. Chase went on to discuss these claims and also went into the disadvantages of the four-speed gear. The disadvantages from the manufacturer's viewpoint were stated very explicitly by Delmar G. Roos, chief engineer of the Studebaker Corporation, who was quoted by Mr. Chase:

"Anyone manufacturing the ordinary three-speed type of gearbox and trying to make a good job of it knows that he has his hands full. Anyone who examines the best designs of the four-speed gearbox with the internal third gear knows that to put a transmission of this kind in the plant and manufacture it with any degree of uniformity is certainly going to be one of the most difficult problems that has yet been put into an automobile factory.

"It is not quite clear to the disinterested observer just what people expect to get from the four-speed gearbox. If the engine size is adequate to permit the use of a rear axle of 3.7 to 3.3:1 ratio, such as Studebaker used in its Commander, with excellent performance on hills, straightaways and acceleration, it seems that very little could be hoped for from putting a four-speed gearbox in such a car. On the other hand, if the engine were inadequate so that the rear-axle ratio, to give satisfactory performance on hills, would have to be say 4.5 or 4.8:1, we can see that, by putting a four-speed gearbox in, we might get an axle that was 4:1 or even 3.9:1 on high and having a ratio in third speed of perhaps 5.5:1.

"The question boils down to this: Can the problem be better and more simply met by an engine of larger

displacement, economically designed as to weight, rather than an engine of intermediate or small displacement in proportion to the weight of the car?

"Our experience so far in driving cars equipped with these gearboxes, particularly in traffic in metropolitan districts and in mountainous districts, has left us at a loss to find that it aroused any particular enthusiasm. They are invariably noisier in third speed than any gearbox that our customers have been willing to accept. Our opinion is that the whole issue is a false one which has been raised in a desperate effort to secure attention and that, unfortunately, it may take hold simply as a fad; but we do not believe it has any sound foundation to rest on, and, in the long run, the public is going to pay, just as it always does, for the experimenting of the engineers."

In concluding his paper Mr. Chase made a plea for the retention of the standard shift in any new gearset that might be adopted. He said many years were required for all American makers to adopt the present standard three-speed gearshift positions, and any tendency to depart from this standard would be unfortunate; and he expressed it as his belief that, if we are to have four-speed under-geared gearsets, the three top speeds should require the same shifting as for the three-speed type, the emergency low-speed being latched out or otherwise arranged to prevent accidental engagement. Any other arrangement is likely to confuse operators in emergencies and lead to many accidents otherwise avoidable.

Tells of Herringbone Gears

F. C. Pearson of Reo Motor Car Co. read a paper on Constant-Mesh or Sliding Gear Transmissions. In this he dealt with the Reo herringbone-gear type of transmission which has been illustrated and described in these columns. Mr. Pearson mentioned that during the development work on the herringbone transmission many combinations of tooth forms and pitches were tried. Experiments were run with gears varying from 8 to 20 diametral pitch.

Results showed that the finer the pitch the quieter the gears in the case of plain-type herringbone-gears. Quietness really hinges upon the width of tooth required to transmit a given load. The coarse pitch permitted a narrower gear than the fine pitch designed to carry the same load. This naturally gives a greater tooth-overlap with the fine pitch. With the high angles used on these gears the tooth-overlap seems to be an important factor in the vibration period of the gear train as a unit.

However, as the pitch grows finer the strength and particularly the fatigue resistance diminish. The next problem was to determine how small a pitch could be used safely to carry the required power. When this question was settled the gears were not as quiet as had been hoped they would be, although they were far better than any conventional transmission.

After many further experiments it was found desirable to use two pitches in both the first-reduction and the intermediate-speed gears. The greatest improvement in respect to silencing the transmission resulted from the use of two pitches in the second-speed gears. The general characteristics of the transmission were discussed as follows by Mr. Pearson:

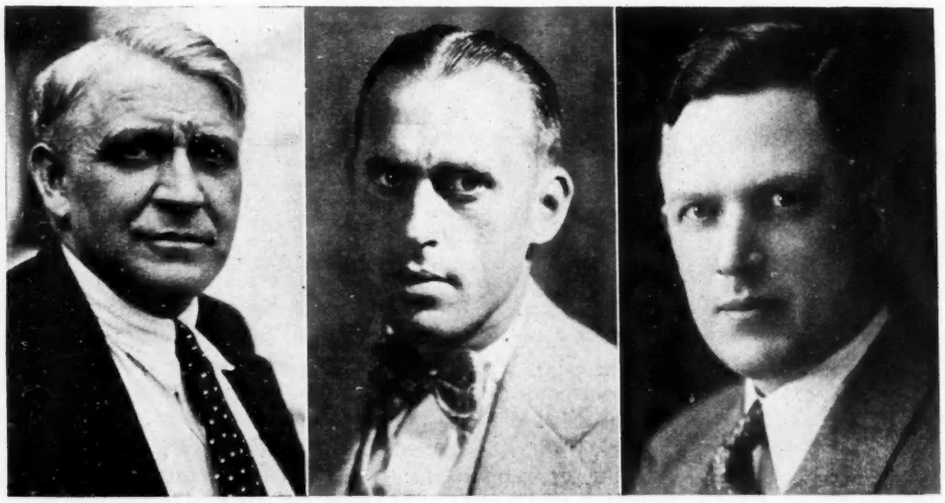
Expense No Greater

"Assembly is no more expensive or difficult than for the conventional transmission. Testing still presents the same difficulties regarding noise as in the spur-gear transmission. It is done in a quiet room at the end of the transmission-assembly line. While the operator thus is unconscious of weather changes, the effects of indigestion have not been overcome as yet, so that the usual arguments arise now and then regarding the passing or rejecting of transmissions bordering on the noise limit.

"Bearing loading is slightly greater for herringbone than for spur gears in transmissions where the center distances between main shaft and countershaft are the same. Transmissions of this type are driven probably 50 per cent more and much faster in gear than the conventional type. This requires more bearing capacity to maintain the same life."

Materials are the same as in the conventional transmission. All of the gear blanks are turned up from bar stock in automatic machines, at a saving in cost and with improved grain structure.

Nominated to S.A.E. Council



Frederick S. Duesenberg, vice-president, Duesenberg, Inc.; Norman G. Shidle, directing editor, Automotive Industries, and Charles E. Tilston, chief engineer, Willys-Overland, Ltd., were nominated to the Council of the S.A.E. at French Lick Springs, as announced June 7 in Automotive Industries -

Propose Standard Code to Govern Truck Width

L. R. Buckendale urges automotive engineers, in cooperation with the Bureau of Standards, to draw up statutes which would meet varying geographical conditions and road limitations + + + +

"The time has come to do away with arbitrary laws fixing the characteristics of motor vehicles and to leave the determination of what may be operated over a given road to engineers."

—L. R. Buckendale

JUST how wide will the heavy duty motor truck of the future be?

The question may seem to be an idle one, but as demonstrated by the discussion at the motor truck and motor coach session of the summer convention, Society of Automotive Engineers, French Lick Springs, May 27, it is one of prime interest at present.

The subject was introduced through the presentation of a paper by L. R. Buckendale, Timken Detroit Axle Co., on the subject of "The Effect of Low Pressure Tires on Axle Design." Mr. Buckendale pointed out in his paper that it was practically impossible to equip some of the heavier duty trucks with low-pressure tires sufficiently large to carry the load required, have room for brakes, springs, differential, etc., and still stay within the maximum width limitation of 96 in. required by legislation in 24 of the 48 states. In concluding his paper, Mr. Buckendale said:

Kill Arbitrary Laws

"The time has also come to do away with arbitrary laws fixing the characteristics of motor vehicles and leave the determination of what may be operated over a given road in the hands of engineers employed by the states. These engineers could be guided by a general code which would meet the varying geographical conditions and road limitations. Such a code could be prepared by automotive engineers working with the Bureau of Standards and operating through the departments and commissions provided by the United States for this purpose."

F. C. Horner, General Motors Corp., disagreed with Mr. Buckendale on the desirability of developing a code, feeling that any steps taken should be made with caution, leaving the road open to alterations in requirements

A. J. Scaife, White Motor Truck Co., who later presented a paper entitled "Analyzing Speed and Ability Factors of Motor Coaches and Motor Trucks," agreed with Mr. Horner. Mr. Scaife pointed out that legislative bodies now have the whiphand and anything done should be done in cooperation with them and through the use of propaganda rather than through the forcing of a code. Mr. Scaife admitted that the presently fairly narrow usual two-lane highway did not permit of any measurable increase in motortruck width, but contended that with the building of newer four and six-lane highways there should be an opportunity for and the desirability of increasing maximum width limitations to considerably higher figures.

Design Progress Hindered

Mr. Scaife further traced the development of the tire and wheel, showing how everything has become more and more crowded around the rear axle. "If this keeps up," he said, "and we still have to stay within 96 in., it will be necessary for us to eventually put a rim on the differential, use a monorail for the frame, and stabilize the whole thing with a Sperry gyroscope."

James Hale, Firestone Tire & Rubber Co., felt, however, that no further changes which would seriously alter the basic design of commercial automotive vehicles were to be expected for some time to come, recommending that the industry go ahead with the tire spacings, etc., now developed.

B. B. Bachman, vice-president of engineering, Autocar Co., agreed with Mr. Horner on this question, taking the attitude that it was impossible to predict future development in commercial vehicles. Mr. Bachman expressed a hope that present tire spacings would be right, but felt that that would have to wait and be determined as the result of service in the field over a period of time.

B. J. Lemon, U. S. Tire & Rubber Co., said that the "blame" for the coming into use of the low pressure tire for trucks should not be laid at the door of the tire manufacturer.

"While the tire manufacturer sees the benefit of low pressure tires for commercial vehicles, the demand for their adoption is coming from the field," Mr. Lemon stated.

As evidenced from the discussion, the whole low-pressure tire situation for trucks and buses is still in the development stage. Axle manufacturers are not at all sure that the spacings specified by the Tire and Rim Association are satisfactory, at least until after

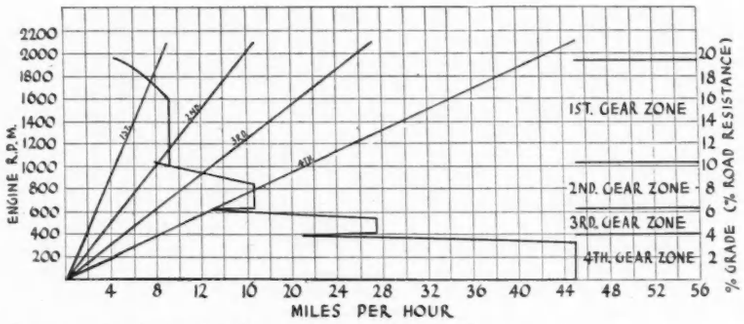


Fig. 1—Analysis of pulling power of a truck geared for climbing 4% grade in fourth speed

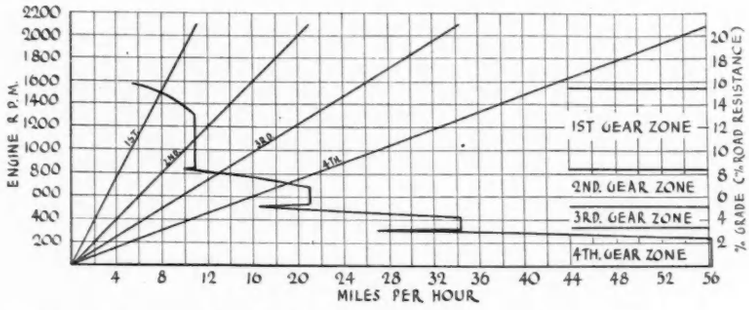


Fig. 2—The same truck with higher rear axle ratio

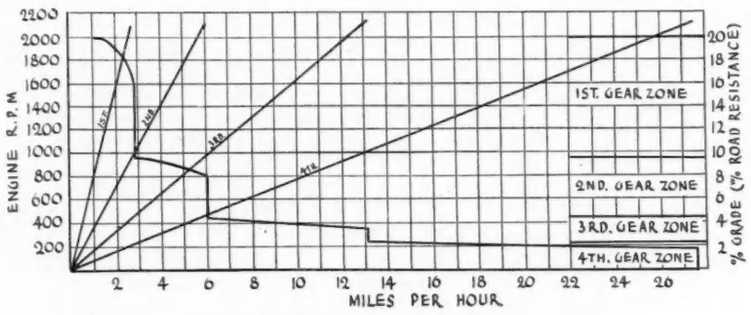


Fig. 3—Where gear ratios are so proportioned as to reduce pick-up after shifting

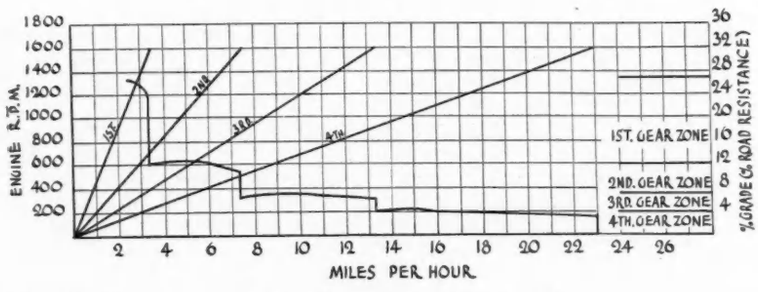


Fig. 4—The same as Fig. 3 with engine speed governed at 1600 r.p.m.

AN analysis of the pulling power of trucks in different gears, with the engine speed and m.p.h. as coordinates. The diagonal lines indicate the relationship in the different transmission gears, including the rear axle reduction

they have been in service for a time under varying conditions. Brakes naturally offer a big problem in this respect, with the ever present, and now further accentuated, heat problem at the higher operating speeds made permissible by the lower pressure tires. To design some of the larger axles to the specified spacings and then find that these are unsatisfactory naturally would result in considerable waste of time, money and equipment, especially where changes in spacings may indicate the necessity of further widening the tread and exceeding the legal limitations. Unless the present size restrictions are altered, it is felt, it will be necessary to go to trailer operation rather than single truck hauling to accommodate the load to be carried on the larger capacities.

An interesting analysis of the ability of trucks to negotiate grades (taken as an indication of pulling power) in different gears was given by Mr. Scaife in his paper. In this method charts are made up with engine speed and miles per hour as coordinates, and diagonal lines showing the relationship in the different transmission gears, including the rear axle reduction, are drawn. The cut-off on these lines represents the governed speed of the engine. In Figs. 1 and 2 this is 2100 r.p.m. Maximum torque is developed at 1000 r.p.m. in the engine shown in these two charts. The only difference between the two is that the truck in the second chart has a higher rear axle ratio.

It will be noted that in Fig. 1, it is possible to climb a grade ranging up to 4 per cent in fourth gear, before the engine speed declines to the maximum torque figure. At this point, a shift into third makes it possible to increase the speed from about 22 to 27 miles per hour, and yet climb a grade up 5 per cent at maximum engine speed. Above this grade the engine r.p.m. again falls off, until 1000 r.p.m. is reached, where a shift has to be made into second, with again a resultant increase in speed and climbing ability. Fig. 2 shows the same cycle with the higher rear axle ratio. In Fig. 3, however, a truck is shown with gear ratios so proportioned that there is no pick-up in speed after shifting, making the shift more difficult, if the advantage of maximum engine torque retention is to be had.

As Mr. Scaife pointed out in his paper, this condition clearly indicates the truth of the law of diminishing returns as applied to all phases of commercial motor vehicle transportation—even gearshifting.

Threats Are Poor Weapons in Battle to Merchandise Parts

(*Continued from page 897*)

4. Eliminate the word "ought" from his merchandising vocabulary. (He couldn't laugh off declining volume in his company by saying that the Sennett dealers "ought" to buy his wares. Imagine the answer of the board of directors of an independent parts company to a general manager who put up any such plea;)
5. Set up machinery to help Sennett dealers get more service work into their shops, realizing that basically his market depends largely on an increased volume of service work by Sennett dealers.

The general manager of our mythical company would differ from the average factory attitude toward parts and service then in two major particulars:

1. Responsibility for the financial success of the whole parts and service program would be definitely fixed in him—one man;
2. His whole attitude and approach would be that of going out to get business in the face of recognized, legitimate competition; Sennett dealers would be customers, not people who *ought* to take his merchandise.

These two fundamentals, several students of parts merchandising agree, constitute the elementary essentials for success on the part of a car manufacturer in recapturing that parts business of his own dealers which has been lost to independents. Based on these fundamentals hundreds of intelligent, specific actions are needed, of course. But it is quite conceivable that no two or three of the specific, intelligent actions would have any material effect in themselves unless tied tight to the fundamentals indicated.

The Independent Repair Shop

Whether or not the average car factory can hope to sell any great volume of repair parts to independent repair shops remains a moot question. Certainly no factory has yet made material progress along these lines. If such parts are to be sold through the car maker's distributor-dealer organization, strong psychological barriers appear. The average dealer looks upon the independent repair shop as a competitor and seems likely at best to remain a supplier of parts to such shops; at the present writing there appears little likelihood that he will become a merchandiser of his parts to the independents. Without selling effort and the quick, eager service provided to independents by jobbers, there seems little chance of this independent shop buying regularly and in quantity from the local car dealer.

This particular problem, perhaps, is one for the future rather than the present. The car dealer himself seems to offer the best immediate market for original equipment parts sold by the car or truck manufacturer. His first efforts, it would seem, may best be directed toward recapturing such of his own dealers' parts business as has been going elsewhere in steadily increasing volume for a number of years, and toward actively helping his dealers to recapture a greater share of the service business which independent repair shops and "one-stop" stations have been garnering.

British Fluid Transmission Devices Are "Reaction Type"

(*Continued from page 909*)

set are pivoted at their leading edges, adjacent to the outlets from the turbine blades, and adjust themselves to the rate of discharge from the turbine, so that the fluid leaves the latter without shock or impact and flows through the return element to the discharge side, where it is delivered through short fixed vanes to the primary element or pump.

The whole casing is filled with fluid; this may be ordinary machine shop "cutting compound" (which is favored because of its being non-corrosive), water or oil. Leakage is prevented by a gland at the rear end of the casing, where the latter encircles a sleeve extension of the stationary element.

The direct drive is afforded by the dog teeth indicated on the flanges of the crankshaft and transmission shaft respectively. They are brought into engagement by the spring shown. Axial movement of the transmission shaft for this purpose also causes the secondary element to move away from the other two, though this is purely incidental.

In operation, as the engine speed is increased the torque is increased, since the delivery of the fluid to the secondary (driven) element increases. Actually, the input horsepower increases as the cube of the speed, the output torque increasing as the square, while the output torque can be as high as three and one-half to four times the input torque. This gives a continuously variable "gearing."

The change of ratio (*i. e.*, the increase of torque) is automatic, since increase of loading at the road wheels slows the transmission and the turbine moves more slowly in relation to the primary. The transmission, of course, can be stalled by overload, but the engine cannot thus be stopped; therefore the engine is protected from overloading at all times.

At idling speed the engine does not pump sufficient fluid into the turbine to drive the vehicle. The latter commences to move as the brake is released and the accelerator opened. This transmission of itself does not provide a reverse motion; for the latter purpose a separate reversing gear is used which may be coupled with a supplementary train of gears to afford an extra low gear ratio for trucks

Engine braking effect with a closed throttle is afforded only when the dog clutch is engaged; when the turbine is in use the vehicle over-runs, as in the case of a gasoline-electric transmission.

NEW DEVELOPMENTS—AUTOMOTIVE

Plymouth Gas-Electric and Oil-Electric Locomotives

THE Fate-Root-Heath Co. (Plymouth Locomotive Works), Plymouth, Ohio, has brought out a new line of gas-electric and oil-electric locomotives in sizes ranging from 25 to 60 tons. The Model GEL 50-ton gas-electric is illustrated herewith.

This model is 31 ft. 4 in. long, and 9 ft. wide. The frame is built of 15 in. I-beams and 9 in. girder beams, with cast steel bumpers and bolsters. Two four-wheel, spring-equalized trucks permit the locomotive to negotiate sharp curves.

Two 6-cylinder engines are mounted, one in each end of the locomotive, developing 350 hp. at 1000 r.p.m.; Westinghouse electrical equipment is used, including two 105-kw., 500-volt d.c. generators mounted on a base with the

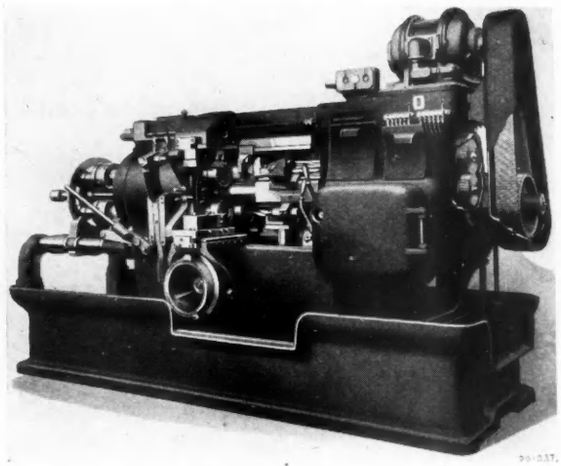
engines; and four 110 hp. motors, two being mounted on each truck.

Control of the engines and of the locomotive is accomplished from a single operating station. Westinghouse 14EL straight and automatic air brakes are standard equipment.

The locomotive has a tractive force of 33,000 lb. at a speed of 2 m.p.h. and a maximum speed of 36 m.p.h.

Gridley Heavy-Duty 4-Spindle Automatic

NEW model "6A" Gridley automatics in capacities of 1⅜ in., 1⅝ in., 2⅝ in. and 3 5/16 in. have been introduced by The National Acme Co., Cleveland, Ohio. This machine has a feed range from 0.001 to 0.140 in. and spindle speeds from 35 to 500 r.p.m. Four independently operated cross slides are furnished with each machine. Each slide is supported on the outer edges and rides on hardened strips. The two lower slides are operated by separate drums, on the outer ends of which are an extra set of cams for operating the top slides. By this method of operation, lever connections are eliminated with a corresponding elimination of all



vibration, "give" and inaccuracy. The cross slides have been enlarged and strengthened. The two bottom slides do the rough forming while finish-forming and cut-off is done in the two top positions.

The column of the machine, in front of the gear box section, is bored in line with the spindles in second and third positions. This permits the use of high speed drilling attachments or accelerated boring or reaming attachments in these positions. The stock stop is an improved, vertical disappearing stop, rigidly supported. The plunger rises and falls, being operated by a cam on the inside of the turret slide cam, which is completely housed, free from all cutting chips. This arrangement permits standard tooling on the fourth spindle the same as on any of the other three positions.

Pettingell 2M Motorized Hammer

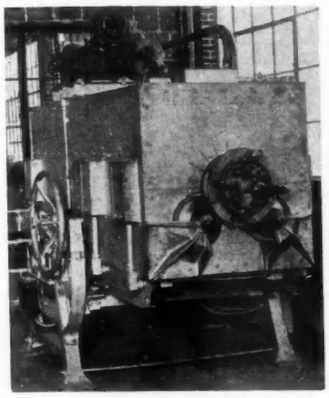
DESIGNED for a variety of shaping, hammering and smoothing operations in metal working shops, the new 2M motorized hammer recently placed on the market by the Pettingell Machine Co., Amesbury, Mass., provides a throat depth of 33 in. and a range of striking force from 0 to 50 lb. The design and construction are similar to their standard hammer, only heavier and more rigid, to take care of the demands for a heavier machine. Timken roller bearings are used throughout. Dies furnished with the machine are slightly shaped, but the operator can change them to suit the work by grinding over an emery wheel, being careful not to draw the temper.

This machine is driven by a built-in motor of 2 hp. capacity, furnished for either 900 or 1160 r.p.m. Net weight ready to install, 810 lb.

PARTS, ACCESSORIES AND PRODUCTION TOOLS

Electric Retort Furnace for Pressure Carburizing

PRESSURE carburizing, hardening and nitriding operations are said to be facilitaed by the new rotary retort furnace recently introduced by the Hevi Duty Electric Company, Milwaukee, Wisconsin. It is mounted on steel legs and is provided with an operating mechanism which permits tilting backward and forward to facilitate charging and discharging. Insulated plugs are used to close the retort both front and rear, being easily removable for loading and unloading.



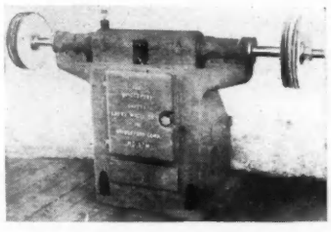
The heating elements are mounted on all four sides of the furnace chamber and are of the Hevi-Duty round rod nickel-chromium type. The elements are mounted in radiant type refractories which permit a direct reflection of heat to the retort, and are readily removable.

Three zones of control are provided to secure an even temperature throughout the length of the retort. Pyrofax gas under pressure is normally used, and is cracked into hydrocarbons and absorbed by the steel charge. Artificial and natural gas as well as carburizing compound are readily used.

The furnace shown here is of 600 lb. capacity. Other models range to 1200 lb.

Bridgeport Motor-Driven Buffing Lathe

PROVISION of ample working space and a selective range of spindle speeds are said to make the new 17 M series buffing lathe particularly useful for operations on large or awkward work, according to a recent announcement by The Bridgeport Safety Emery Wheel Co., Inc., Bridgeport, Conn. The wheel spindle is driven by a multiple drive made up of Vee belts from the motor.

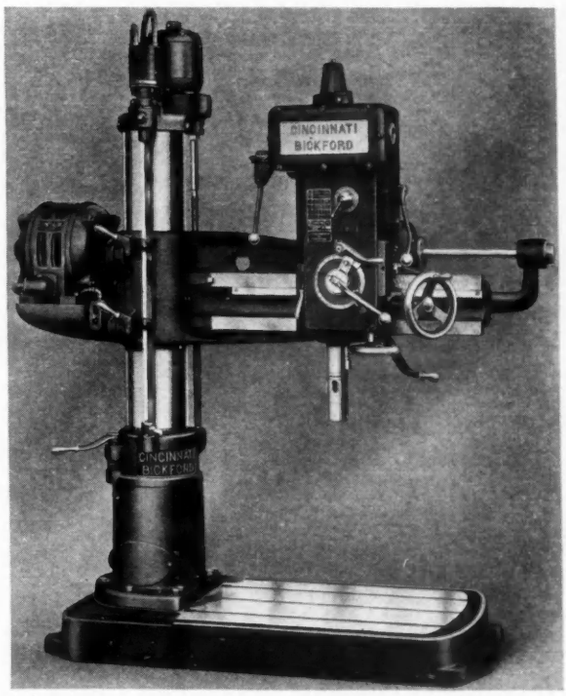


The motor located inside the base is secured in a saddle which may be swung up or down to make the necessary center adjustment on the drive. The wheel spindle is carried by four sets of ball bearings, two of these sets being carried in each cast-iron housing. Spindle speeds may be varied readily over the listed speed range by changing the driving sheave on the motor to one of appropriate size. A locking pin built into the machine rigidly locks the wheel spindle when changing wheels.

These machines are equipped with 90 deg. C. squirrel cage motors of 3, 5, 7½ and 10 hp. capacity at 1800 r.p.m. Current requirements, A.C., 60 cycle 2 or 3 phase, 220 or 440 volt. Size of base 23 by 23 in. and 33 by 25 in.; total length of spindle 65 in. and 77 in.

Cincinnati Bickford 3-Ft. Radial Drill

TWELVE speeds ranging from 71 to 1500 r.p.m. are available on the 2A radial drill just added by the Cincinnati Bickford Tool Co., Cincinnati, Ohio. This machine is made in two styles, direct-connected constant-speed motor drive and constant speed pulley belt drive.



Driving clutches operate at constant speed since all speed changes are made in the head. Centralized control of speeds and feeds is provided at the operating station located within easy reach of the operator.

This machine is built with a 3 ft. arm on a 9 in. column.

Automotive Oddities — By Pete Keenan

CHIEF OF A LARGE NEGRO TRIBE WAS PRESENTED WITH AN AUTOMOBILE BY THE GOVERNOR; WITHIN TWO WEEKS HE MADE HIS SUBJECTS BUILD A SPLENDID SYSTEM OF ROADS SO HE COULD USE THE CAR.
Nairobi, Africa 1929.

A JEWELRY FIRM BUILT THIS TINY AUTO OUT OF DIAMONDS, RUBIES AND EMERALDS AT A COST OF $100,000. ITS LENGTH IS LESS THAN 2 FT.
Baltimore, Md.

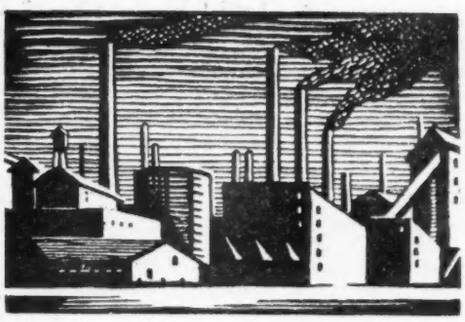
PRETTY BONNIE BROWN, WHO HELD THE PARACHUTE JUMPING RECORD FOR WOMEN, DIED AFTER A 20 FOOT FALL IN A GLIDER.
Los Angles, April 1930.

Pete Keenan

AUTOMOTIVE INVENTIONS ARE 25% OF ALL PATENTS

EDWARD GAM, A GARAGE-MAN, WAS HURT IN A CRASH, BUT WORKED ALL NIGHT REPAIRING A CAR BEFORE HE COLLAPSED WITH CONCUSSION OF THE BRAIN.

NEWS OF THE INDUSTRY



Automotive Exports Decline in Value

Decrease in April Shipments Caused by Miscellaneous Items

WASHINGTON, June 11—April automotive exports from the United States showed only slight variance from March, and shipments for the first four months are well maintained, according to figures released today by the automotive division of the Department of Commerce.

The total valuation of automotive products exported during April amounted to $37,443,661, a decrease of $2,521,307, or 6.3 per cent, as compared with the March figures. This decline was entirely accounted for, it was explained, by the falling off in the shipments of miscellaneous products. The combined exports of passenger cars and trucks for the period under review amounted to $25,039,616, as against $21,928,386 during the preceding month, and $17,749,210 in February.

"Our overseas trade in passenger cars was practically unchanged, in comparison with business in March," said the division, "due to the improved exports of the low and high-priced classifications, which offset the recession in the medium-priced group. In the truck group a greater demand was noted in the medium and large capacity models, which resulted in a higher total than that recorded during March."

Outboard Sales Increase

MILWAUKEE, June 9—Substantial increase in sales for the first four months of 1930 over the same period of 1929, and a considerably greater expansion in earnings, are announced by the Outboard Motors Corp., Milwaukee, maker of Evinrude, Elto and Lockwood gasoline engine power units for rowboats and canoes. Sales for the period were $1,191,603, against $984,322 last year. Orders booked so far this year are in excess of 25,000 units, compared with an all-year 1929 sales record of 23,000 units. The Milwaukee works have been at peak production with about 600 employees for two months. A new racing motor is being made.

Discrepancy

Sales of merchandise are three times less than the amount justified by the current impairment of buying power, in the judgment of Paul G. Hoffman, vice-president in charge of sales, Studebaker Corp., who expressed this view on June 10, before a meeting of his Buffalo dealers and distributors.

Ford Plans Shut-Down For Two-Week Period

DETROIT, June 11—The Ford Motor Co. will give its employees a general vacation this summer when the Rouge plant and offices will be shut down, according to an official announcement this week. During this period, the exact time of which has not yet been fixed, all salaried employees will receive pay, but wages of shop workers will be suspended.

The order for the general shut-down was the result of difficulties encountered last summer when holidays of department heads were distributed during the summer months, it was explained. While the plant is closed a new water intake tunnel for the factory's electrical plant is to be completed.

Pierce-Arrow Promotes Baldwin

BUFFALO, June 12—W. M. Baldwin has been appointed assistant general sales manager of the Pierce-Arrow Motor Car Co. He is succeeded as advertising manager by W. E. Fellows, formerly with the Oakland-Pontiac Division of General Motors Corp. Mr. Baldwin's experience with Pierce-Arrow extends over 13 years, six of which he was advertising manager.

Studebaker Wired for Radio

SOUTH BEND, June 10—Studebaker President Eight and Commander Eight closed models are now wired for radio installation, according to J. M. Cleary, sales manager.

A.S.M.E. to Widen Cutting Research

Present Committee to Work Out Tungsten Carbide Program

DETROIT, June 12—The possibility of cooperative action on the part of tungsten carbide suppliers, machine tool manufacturers and users of both, to establish a research agency for determination of machine tool and operating requirements in connection with the use of tungsten carbide tools, was brought one step nearer at the Monday afternoon session of the semi-annual meeting, here, of the American Society of Mechanical Engineers.

Ernest F. DuBrul, general manager, National Machine Tool Builders Association, in his introductory address at the session pointed out that the development of machine tools using tungsten carbide small tools would be a necessarily slow and expensive development unless some independent research agency were financed to determine the underlying fundamentals of cutting with cemented tungsten carbide.

C. W. Spicer, vice-president and chief engineer, Spicer Manufacturing Corp., tried several times to adjourn the session due to the lateness of the hour, but interest in the general topic was so keen that it became impossible to terminate the discussion until after E. J. Kearney, of Kearney & Trecker, offered a motion, seconded and adopted,

(Turn to page 924, please)

Merger Shares Listed

DETROIT, June 9—The board of governors of the Detroit Stock Exchange has approved the listing as of June 5 of 62,500 shares of class "A" no par stock and 287,500 shares of common no par stock of the Muskegon Motor Specialties Co. The Class "A" stock is on an annual dividend basis of $2 and the common stock $1. Of the 287,500 shares of common stock, 125,000 shares are now outstanding, 100,000 shares are reserved for exchange on a share for share basis for capital stock of the Jackson Motor Shaft Company, and 62,500 shares are reserved for the conversion of class "A" stock which is now outstanding.

Praise Coker Clarkson's Leadership

Telegrams expressing the loss to the automobile industry in his passing, were received by Automotive Industries this week from engineers and executives.

Alfred P. Sloan, Jr.

President, General Motors Corp.

"I appreciate the opportunity you have given me of adding my sentiments to those of others in the industry in the way of expressing appreciation which we all must have of the constructive accomplishments of Coker Clarkson in his contribution to making our industry a better industry through a broader understanding of its engineering problems."

Alfred Reeves

General Manager, N.A.C.C.

"In the passing of Coker Clarkson, the industry loses one of its real guides whose leadership not alone included engineering but whose sound judgment in business matters enabled him to contribute in most helpful fashion to the general problems of motor manufacturing and selling. We shall all miss his uniform courtesy, his personal charm, and his readiness to be of service upon call. He will occupy an important niche in the motor hall of fame."

Vincent Bendix

President, Bendix Aviation Corp.

"I am personally most grieved to learn of the untimely death of Coker Clarkson, who had given so much of his life to so important and far reaching an undertaking as the Society of Automotive Engineers, the success of which, to a great extent, can be attributed to the able and painstaking work of Mr. Clarkson."

Fred S. Duesenberg

Vice-President, Duesenberg, Inc.

"Was shocked and grieved to receive news of Coker Clarkson's death. Through his efforts, foresight, and leadership over the past twenty-five years, the Society, industry and the automobile-using public have been benefited beyond measure. His death is a great loss, but his leadership and past efforts will be a great factor in the industry for many years to come. We have lost a true friend and adviser."

Henry M. Crane

General Motors Corp.

"We admired Coker Clarkson for his outstanding ability and the tireless energy that he devoted to the affairs of the Society of Automotive Engineers and loved him for his winning personality and self-effacing modesty. Working with him was a pleasure and a liberal education. His memory will remain a prized possession and a continuing inspiration."

B. B. Bachman

Vice-President, Autocar Co.

"Coker Clarkson was the guiding spirit whose genius molded the ideas of many into a vital force through the giving of himself as an untiring servant. He earned the crown of leader. The privilege of being admitted to his friendship was an inspiration."

C. F. Kettering

Director, General Motors Research Laboratories

"Coker Clarkson was a high type of organization personality in his position as manager of the Society of Automotive Engineers. He developed a spirit of cooperation among competitive engineers which, I believe, has never been equaled. His honesty and fairness in handling all questions were truly admirable. I regarded Coker as one of my best personal friends and a visit from him was always a high spot. No frail words of mine can express my sympathy to his family or my own personal regrets at his going."

F. E. Watts

Chief Engineer, Hupp Motor Car Corp.

"In the past 20 years the motor industry has known no more farsighted, courageous and able leader than Coker Clarkson. While most of us were still using the term automobile, he began to use 'automotive.' S.A.E. standards will be his most lasting monument and will endure long after we who have known and loved his charming personality shall have passed away."

Edward P. Warner

Editor, Aviation, and President, S.A.E.

"In Coker Clarkson's death, not only the Society of Automotive Engineers, but all automotive industrial activities suffer an inestimable loss. The service that his guidance of the Society's work has rendered to American technical science, standardization of automobile products, and to the encouragement of cooperative research had only to be known to be appreciated. He has left a noble memorial to himself in the magnificent work that will be carried on along lines for the initiation of which he was largely responsible."

John A. C. Warner

Studebaker Corporation

"Coker Clarkson truly gave his life for his fellowmen. His course among us was determined by his understanding of the wishes of others. On this foundation he has built an enduring and magnificent monument that will always remind us of his faithful devotion and his sterling personal attributes. No words can adequately express the loss that I feel and no tribute can fully estimate my respect, admiration and affection for Coker."

H. D. Church

Vice-President, White Motor Co.

"In the passing of Coker F. Clarkson, the Society of Automotive Engineers, and the automotive industry as a whole, has lost an outstanding figure. His judicial type of mind, trained to consider both sides of a question before making a decision, together with his vision and broadmindedness ideally fitted him for leadership during the years when the automotive industry was rapidly growing. His sincere and friendly feeling for his fellows made him universally liked and respected. We have lost an earnest coworker and a good friend."

J. G. Vincent

Vice-President, Packard Motor Car Co.

"The automotive industry has suffered a very great loss in the death of Coker Clarkson, and it was with deep personal regret I heard of it today. Standardization work of the Society of Automotive Engineers, in which he was a leader, was one of the great accomplishments of the industry and had far reaching effects throughout the world."

G. A. Green

Vice-President, General Motors Truck Corp.

"We are inexpressibly shocked to learn of Coker Clarkson's death. Our feeling is that amazing growth and development of American automotive industry is in no small measure due to the broadminded and cooperative attitude exhibited by the various manufacturers, which spirit has been fostered and encouraged as a result of Society of Automotive Engineers activities and the fact that the leading spirit in these activities, is now no longer with us can be regarded as nothing short of a disaster. Coker Clarkson's loyalty and devotion of the Society has been an inspiration to the members and had his activities been concentrated in other fields, he would undoubtedly have attained industrial leadership. We all loved, admired and respected him, and shall sadly miss his cheerful presence."

M. L. Heminway

Managing Director, Motor & Equipment Association

"I have not sufficiently recovered from the shock to yet realize that Coker Clarkson has really left us. It was my privilege to know him well for many years, and that meant to love him. One could not associate with him without a consciousness of his many sterling qualities. He was outstanding as a man and executive. I personally feel his loss deeply as must our entire industry, which he served so faithfully and creditably."

J. M. Crawford

Chief Engineer, Chevrolet Motor Co.

"I will feel keenly the loss of Coker Clarkson. His interest and friendly manner in the early days of our contact, and his sound counsel in late years will always be a pleasant memory."

in Automobile Industry

Thomas J. Litle
Consulting Engineer

"The passing of Coker Clarkson leaves us almost mute and expressionless. We had learned thoroughly to love him for the great human interest in his work and associates. His name goes down in automotive history as one of our greatest leaders. Our deepest sympathy is extended to Mrs. Clarkson and his family."

W. R. Strickland
Cadillac Motor Co.

"Modern industry, no less than war, claims the most industrious and fearless leaders. Knowing Coker F. Clarkson most intimately the last strenuous and fruitful years of his life, convinces me of the great part he played in the growth of the Society of Automotive Engineers, its standing influence and social service. His life work will be a monument to the future."

J. H. Hunt
General Motors Corp.

"The Society of Automotive Engineers, as it exists, is due more to the work of Coker Clarkson than any other individual. His work in developing automotive standards has been all important in this contribution to American industrial efficiency. His associates in our Society have lost a valued friend."

William G. Wall
Consulting Engineer

"As Coker Clarkson's death is a great shock, so his life should be an inspiration to all of us. A brilliant mind, an indefatigable worker, building up his beloved Society of Automotive Engineers from a puny infant to a great organization of untold benefit to the Automotive industry. A most lovable character. We will miss him greatly."

E. P. Chalfant
Executive Vice-President, N.S.P.A.

"Coker has passed the great divide. What a profound shock to those of us who have known and loved him for years. A quarter century ago he was my personal assistant manager with the licensed association and I have watched with pride his development into outstanding leadership. Coker awaits the coming of his old associates and leaves us his wonderful personality and spirit to illuminate the way."

L. Clayton Hill
Vice-President, Dietrich, Inc.

"Society has lost the great sustaining influence responsible for its growth and accomplishments. Coker Clarkson represented finest qualities of an American gentleman; beloved by all privileged to know him; well dignified yet democratic; forceful, yet diplomatic. His uncommon sense of humor, congeniality and diplomacy smoothed ruffled matters in all controversial matters. His opinions always demanded respect. Because of his belief in thorough analysis and mediation before action his logic largely determined decision on all major society policies. A leader, but genuinely modest regarding his own achievements and in expression of his views possessed of outstanding journalistic ability. Apostle of perfection in all he and his associates undertook. Unselfish in his arduous labors for advancement of Society and our profession. I personally feel deeply the loss of most inspiring personality and friend under whose direction it has ever been my privilege to work."

K. T. Keller
Vice-President, Dodge Brothers Corp.

"The automobile industry will miss Coker Clarkson and the engineers of this industry will feel the absence of his energetic, enthusiastic and inspiring efforts in behalf of the free interchange of experience and good fellowship which he so ably sponsored. More important we have lost a good friend and sympathetic associate."

H. W. Alden
Chairman, Timken-Detroit Axle Co.

"Every organization has a man around whom everyone turns; he holds this position by virtue of real qualities of leadership. Such covers Coker Clarkson, whose passing we all so much regret. His knowledge of his job, his industry and loyalty, together with an unusual personality, made him what he was."

William A. Reid

MILWAUKEE, June 9—William A. Reid, a pioneer engineering and production executive in the automotive industries, died June 5 at Rochester, Minn., from the effects of an operation. He was born in Racine, Wis., in 1875. He entered the engineering staff of the former Pierce Engine Co. at Racine and rose to general superintendent. When the Pierce engine and automobile business was taken over by the J. I. Case Threshing Machine Co., Mr. Reid was appointed chief engineer of the division.

Later he was a division superintendent of the Thomas B. Jeffery Co. at Kenosha, Wis., now the main works of the Nash Motors Co., but afterward again had charge of the Case passenger car division until the threshing machine company discontinued the manufacture of automobiles. In recent years Mr. Reid was production manager of the Jacobson Mfg. Co., Racine, manufacturing gasoline powered lawn mowers for golf courses, estates, etc.

Kettering Addresses Chemists

DETROIT, June 9—C. F. Kettering, head of the General Motors Research Division, and a vice-president of the corporation, addressing the American Institute of Chemical Engineer at the society's banquet here, last Thursday night, said that the future of the industry lies in the hands of the chemical engineer and the synthesist. The society held its annual summer meeting at the Book-Cadillac Hotel here this week.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries.

NEW YORK, June 11—General business last week was only on a fair scale. Retail trade in seasonal goods was stimulated by the higher temperatures, and the demand in some wholesale and jobbing lines was slightly improved. The slowness of the big industries during May has continued so far this month.

BUSINESS PROFITS

Business profits during the first quarter of this year, according to a report issued by the Federal Reserve Bank of New York, were 22 per cent below those in the corresponding period last year, but 5 per cent above those in the corresponding period in 1928.

COMMERCIAL FAILURES

Commercial failures during May, according to R. G. Dun & Co., totaled 2179, the lowest since last December, as against 2198 during the preceding month and 1897 a year ago. Liabilities involved in the May failures amounted to $55,541,426, as against $49,059,308 in the preceding month and $41,215,865 a year ago.

FARM PRICE INDEX

The index of the general level of farm prices on May 15 was 124 per cent of the pre-war level, as against 127 per cent a month earlier and 136 per cent a year earlier.

CRUDE OIL PRODUCTION

Average daily crude oil production for the week ended May 31 amounted to 2,609,450 bbl., as against 2,579,500 bbl. for the preceding week and 2,711,650 bbl. a year ago.

CAR LOADINGS

Railway freight loadings during the week ended May 24 totaled 931,472 cars, which marks a decrease of 130,616 cars below those a year ago and a decrease of 89,931 cars below those two years ago.

BANK DEBITS

Bank debits to individual accounts outside of New York City during the week ended June 4 were 18 per cent below those in the corresponding week last year.

BROKERS' LOANS

Brokers' loans in New York City during the week ended June 4 increased $79,000,000, bringing the total up to $4,101,000,000, as against $5,284,000,000 a year ago.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended June 4 showed increases of $13,000,000 in holdings of bills bought in the open market, of $14,000,000 in holdings of Government securities, and of $44,000,000 in total deposits. Holdings of discounted bills decreased $7,000,000. The reserve ratio on June 4 was 82.2 per cent, as against 82.9 per cent a week earlier and 88.4 per cent two weeks earlier.

A. S. M. E. Opens Third Annual Oil Power Session at State College with 200 Present

STATE COLLEGE, PA., June 12—Registration of more than 200 A.S.M.E. members and guests marked opening of Third National Oil Power Meeting here today. A broad variety of subjects are offered in various papers. Particular interest surrounds one by C. A. Lorenzen of Berlin, Germany, internationally known for his work in the development of the Gas Turbine. While Dr. Lorenzen's personal attendance at meeting is not expected, his paper will undoubtedly elicit much discussion as it covers application of exhaust gas turbine-driven superchargers for Diesel engines, possibly of aircraft type.

Papers by Commander E. E. Wilson, Standard Steel Propeller Corp., "The Oil Engine in Aeronautics," one on "Nitride Hardening of Alloy Steel Parts for Diesel Engines," by C. R. Alden of Ex-Cell-O Aircraft & Tool Co., and report on latest oil spray research experiments by Prof. P. H. Schweitzer of State College, are considered important to automotive engineers.

Problems incident to the application of the Diesel to creeper type tractor and excavators are to be discussed in a paper by C. G. A. Rosen of Caterpillar Tractor Co., San Leandro, Calif.

Presents Paper at Oil Meeting of A.S.M.E.

Commander E. E. Wilson

Wilcox Plans New Plant

DETROIT, June 9 — Wilcox-Rich Corp. will break ground in about 10 days for an addition to its Saginaw, Mich., plant which will increase the floor area of that unit over 40 per cent. The addition is expected to be completed about two months later. The enlargement is planned to offset segregation of the tappet and ring production in the Saginaw division.

Directors of the company have declared the regular quarterly dividend on the A and B common stock, 61½ cents and 50 cents respectively, both payable June 30 to stockholders of record June 20. Those who have deposited the B stock in accordance with the plan of the Wilcox-Rich, Eaton Axle merger, will receive the next quarterly dividend of 75 cents on Eaton Axle & Spring, payable Aug. 1.

Lauson Reincorporates

MILWAUKEE, June 9—The John Lauson Mfg. Co., New Holstein, Wis., manufacturer of farm and road tractors, gasoline engines, etc., has been reincorporated as the Lauson Corp. Capitalization consists of $100,000 preferred stock and $522,988.58 common stock. The Lauson interests have retired. F. D. Edson is president; H. N. Edens, vice-president, and Clifford O. Piper, secretary and treasurer.

Some time ago the Lauson "snowmobile" and the "snowflyer," manufactured in the East, joined interests, and the new Holstein plant is being enlarged.

A. S. M. E. Plans Research on Tungsten Carbide Tools

(Continued from lead news page, this issue)

to the effect that the present Research Committee on the cutting of metals of the A.S.M.E. work out a program of the research to be followed, for presentation to research laboratories and interested parties.

By offering a concrete program it was felt there should be more of a chance to obtain the financial assistance needed for carrying out the work. Mr. DeBrul estimated the cost at around $500,000. It was also suggested that in working out this program, the A.S.T.M. committee cooperate with the American Society for Testing Materials, and the Society of Automotive Engineers, but no action was taken on this suggestion.

F. C. Spencer, Western Electric Co., presented a report of the sub-committee on tungsten carbide cutting materials compiled as a result of questionnairing 600 users and builders of machine tools. The report indicated that while successful applications of cemented tungsten carbide cutting tools outweighed failures, considerable improvement in machine tools seemed to be indicated as necessary.

Among these were greater rigidity of the frame, driving shaft, spindle and tail stocks, larger capacity ball bearings for spindles, considerably higher speeds, greater power including reserve for overloading, more consistently operating feeding mechanisms, heavier tool holders, and better provision for handling chips. It was felt, however, by the committee as the result of these questionnaires that for many applications, cemented tungsten carbide tools could be used with increased economy on even present types of machine tools and older tools provided they are in good condition.

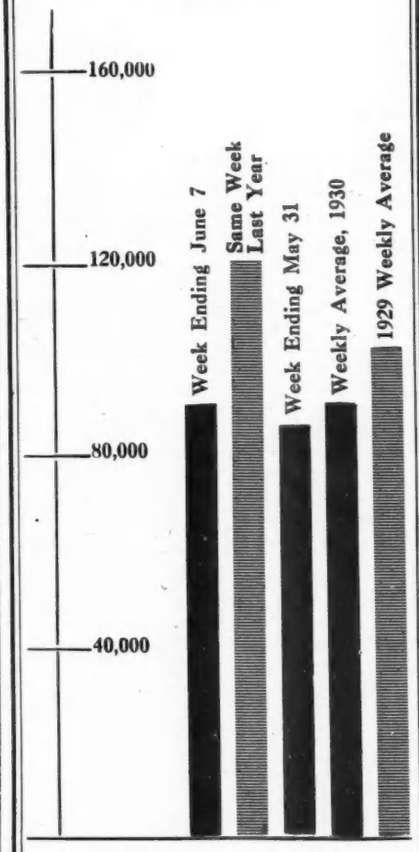
Tire Makers Sensing Tariff Repercussion

Possibility of Swiss Retaliation Reported by Official

AKRON, OHIO, June 11—Effects of the European boycott on American-made goods as a result of the proposed Hawley-Smoot tariff measures were being felt in Akron, Wednesday, by rubber manufacturers. Refusal of European consumers, practically those of Switzerland, to buy American-made tires because of the high duties set up in the proposed tariff law was reported to officials of Akron manufacturing plants.

Officials of the General Tire & Rubber Co. disclosed the Swiss situation in a letter to Congressman Francis Seiberling. H. G. Lubke, vice-president of the General Tire & Rubber Export Co., in a letter from a Swiss representative of the company, was told how the boycott is working out.

Automotive Industries Production Chart Weekly



The composite chart appearing above will delineate each week production of passenger cars in the United States and Canada, for the week preceding publication of the issue in which it appears, together with production for the preceding week, and other factors. Data used in compiling it are obtained in confidence from a number of sources. Other factors may be added, dependent upon the cooperation of additional sources of information.

Chanter Denies Pierce Will Move Buffalo Plant

Says Company Experimenting With New Truck Model

BUFFALO, June 9—Denying rumors of a curtailment in production activities and reports that Pierce-Arrow will remove its plant from Buffalo, Arthur J. Chanter, vice-president and general manager of the Pierce-Arrow Motor Car Co., announced today the company is planning an increase in manufacturing operations at the Elmwood Avenue plant.

The expansion program includes the manufacture of a new line of heavy-duty commercial trucks on which experiments are now being conducted. Production of the new truck line, Mr. Chanter announced, will be started early this fall. Addition of the new type truck to Pierce-Arrow productions will make necessary the installations of new machinery and plant equipment.

The company first began to build commercial vehicles in 1911. Production continued in increasing quantities until two years ago, when a passenger car expansion program was undertaken. At that time it was decided to modernize the design of the company's line of trucks, and production of the then current models was allowed to decline.

Mr. Chanter announced that experimental trucks of the new type are now undergoing satisfactory road tests, but declined to reveal a description other than to say they will embody many new features that no other truck has.

Rubber Market Recedes

NEW YORK, June 9—Crude rubber prices receded to new lows for the third successive week, last week in both New York and London, according to the weekly market letter of F. R. Henderson Corp. July delivery sold at 12.7 cents for the lowest price in the history of the Rubber Exchange. While producers are considering further methods to curtail production, persistent rumors of communistic activities in Java present possibilities for further influence on the market.

Arrivals of crude rubber in United States during the first six days of June are estimated at 1450 tons and the preliminary estimate for the entire month is placed at 40,000 tons. Stocks in London have continued to increase and are now placed at 77,198, while Liverpool stocks have increased to 25,526 tons.

Correction

In the chart reproduced in *Automotive Industries*, of the issue of June 7, on page 869, showing the relation between current consumption and brake torque of the Warner electric brake, decimal points were erroneously omitted from the figures along the horizontal scale, which made these figures 10 times as large as they should have been. The current consumption range is up to 3 amp. and not 30 amp.

Ford to Operate Filling Station

MARLBORO, MASS., June 9 — The City Council has voted unanimously to permit Henry Ford to operate a gasoline filling station on the Boston Post Road, less than two miles west of his historic Wayside Inn at South Sudbury. The petition was signed by the motor magnate and his wife, Clara Ford.

H. A. Pierce is Promoted

H. A. Pierce who has been assistant sales manager of the Burgess-Norton Manufacturing Co. has been promoted to the position of sales manager.

Austrian Car Makers Plan New Assault

VIENNA, June 7—The leading Austrian automobile manufacturers, Austro-Daimler, Austro-Fiat, Puch and Steyr, have united in a selling pool which has received a loan of $10,000,000 from the Credit Anstalt.

It is hoped by this means to revive the Austrian motor car industry, which has been steadily declining. As one of the first results of the new move, the Steyr works has recommended production.

Two Resignations Announced

ROCKFORD, ILL., June 9 — The resignation of R. L. Macdonald and G. S. Hollister as vice-president and secretary-treasurer, respectively, of the Price-Hollister Co., has been announced by Charles W. Price, president. Eric S. Ekstrom, president of the Mechanics Universal Joint Co., and R. L. Emerson, secretary of the same company have associated themselves with the Price-Hollister organization, according to the announcement.

Contracts Let on Ford Assembly Plant Project

Work Will Begin at Once. 3500 to be Employed

BUFFALO, June 10 — Construction work on the new Ford plant on the Hamburg turnpike, inside the city limits, will begin at once following awarding of contracts for filling in the site and laying the foundations.

While the Ford company was reported to have acquired 60 acres of the waterfront, it is known that the company has options on the titles to 100 acres of land for possible purchase. The cost of the 60 acres has been reported at $100,000.

The first unit of the plant will be for assembling, a project which will employ 3500 men. A reduction plant for dismantling old Ford cars may be added later. The company now has a plant in North Main Street, but no intimation as to its fate has been given. The new plant likely will be in operation by Dec. 1.

Bellanca Sales Gain

NEW YORK, June 9—Sales of Bellanca Aircraft Corp. for the 5 months' period ended May 31 totaled $281,335, compared with $132,873 for the corresponding period last year. Orders for June delivery this year total $110,365, so that, without receiving any additional orders this month, company will have shipments for the first six months totaling $391,700, against a total of $200,984 for the first half of 1929. Total sales for the entire year of 1929 reached $547,515.

Durant Coach Priced At $750

DETROIT, June 9—Durant dealers soon will display the new four-door coach which has been added to the 6-14 line, according to an announcement by R. T. Hodgkins, general sales manager. The factory list price is $750.

Rubber Invoiced to U. S.

WASHINGTON, June 10—American consular offices at Singapore, Penang, Colombo, Batavia, Surabaya, Medan, London and Liverpool, whose vise invoices on all rubber shipped to the United States from Malaya, Ceylon, Netherland East Indies, and the United Kingdom, report by cable the following amounts of rubber invoiced during the week ended June 7 as compared to amounts invoiced in 10 preceding weeks.

1930 Week Ended	British Malaya	Ceylon	Netherland East Indies	London and Liverpool	TOTAL
March 29	5,867	1,335	1,462	Nil	8,664
April 5	7,435	779	2,109	Nil	10.323
April 12	7,026	1,235	1,527	7	9,795
April 19	6,013	493	1,109	21	7,636
April 26	5,558	642	1,224	Nil	7.424
May 3	7,703	1,384	1,806	25	10,918
May 10	6,863	891	1,271	11	9,036
May 17	8,863	650	1,874	30	10,913
May 24	6,041	741	1,500	162	8,444
May 31	6,532	738	1,746	54	9,070
June 7	6,443	1,020	1,971	24	9,458

All figures in long tons.

Men of the Industry and What They Are Doing

Pirie Advanced When Arrow Makes Promotions

A change in personnel of the Arrow Aircraft & Motors Corp., including the promotion of C. B. Pirie, former purchasing agent and credit manager, to general manager and assistant to the president, is announced by George Woods, president of the board of directors. James Fisher, manager of Arrow Airport, Inc., Arrow Flying Service, Inc., and Arrow Flying and Trade Schools, has been made factory director of sales.

Robert King will be assistant purchasing agent. Ralph E. Anderson, sales manager for the Lincoln Aircraft Co. until recently, has been appointed district sales manager for middle western territory for Arrow. L. E. Miller, formerly purchasing agent for the Fleetcraft Airplane Co., has been secured as manager of the truck service department of the Arrow company.

Duggan Returns to Detroit

Tom Duggan, merchandising service director of the National Standard Parts Association, has returned to Detroit from a six months' trip through most of the states west of the Mississippi. Visits were made to the establishments of 71 NSPA jobbers, 14 manufacturer members and 56 non-members. Mr. Duggan addressed 28 major trade meetings at which the aggregate attendance was 11,922.

Guernsey Leaves for Europe

Charles O. Guernsey, chief engineer, automotive car division, J. G. Brill Co., Philadelphia, sailed from New York June 11 for a European trip. Mr. Guernsey expects to spend about two months abroad in a study of the latest developments in automotive engines.

Moon to Distribute Ruxton

ST. LOUIS, June 10—Following the recent announcement by Helm Walker, vice-president in charge of sales for the Moon Motor Car Co., that the Ruxton front-wheel-drive car will shortly be in production in the St. Louis plant of the Moon Company, the company's sales organization throughout the country has contracted for the distribution of this front-wheel-drive car. Present plans are to continue production of the Windsor cars.

McAleer Adds Products

DETROIT, June 9—A quick lustre cream for use on all lacquered, varnished or enameled surfaces, both automobiles and furniture, and a touch-up enamel have just been placed on the market by the McAleer Mfg. Co., Detroit.

Nominated

A. K. Brumbaugh

who has been nominated for vice-president of the Society of Automotive Engineers, representing production engineering. Mr. Brumbaugh is commercial engineer, White Motor Co.

Mohawk Elects Borland

Charles Borland of Chicago has been elected president of the Mohawk Rubber Co., to fill the vacancy caused by the resignation of S. S. Miller, which was accepted by the board of directors last Thursday. Mr. Miller was elected chairman of the board. The same procedure was followed by the Miller Rubber Co. Mr. Borland has been a member of the Mohawk board of directors since February.

Republic Appoints Schaeffer

Arthur Schaeffer has been appointed sales manager of the Detroit district for the Republic Steel Corp., it is announced by H. T. Gilbert, vice-president in charge of sales of the corporation. Mr. Schaeffer formerly was sales manager in Detroit for the Central Alloy Steel Corp.

Graham Producing New Bodies

EVANSVILLE, IND., June 9—With the addition of two new styles to its regular production schedule, the Graham-Paige Body Corp. here is now progressing, according to seasonal expectations, R. E. Stone, secretary, reported. The businessman's coupe and the coupe with rumble seat are models recently added to the local production line. Daily output is now averaging 150 bodies, requiring a force of 1000 people for operation, Mr. Stone stated.

Motors Names Mackinnon to Canadian Sales Post

J. H. Beaton, general sales manager of General Motors of Canada, Ltd., announced the appointment of Ross Mackinnon as assistant general sales manager of the company.

The new assistant sales manager was born in Brampton, Ont., spent his youth in Grimsby, and finished his education at the University of Toronto. He has had 27 years' business experience, the last 10 of which have been with General Motors of Canada, Ltd., as sales manager of the Chevrolet and Oakland divisions. Due to many business trips from end to end of the Dominion, Mr. Mackinnon is personally acquainted with General Motors dealers in practically every town and city.

Race Officials Named

Leading American Flyers are included among the officials appointed to serve at the National Air Races which are to be held at Curtiss Field from Aug. 23 to Sept. 1. Maj. R. W. Schroeder, chairman of the contest committee, announced the appointment of the following: Frank A. McKay, Carl F. Egge, Capt. Ray Collins, E. W. (Pop) Cleveland and Carl E. Shory, Stuart F. Sinclair of Chicago is chief scorer.

G. M. Elects Purvis

A. B. Purvis, president of Canadian Industries, Ltd., of Montreal, Can., was chosen a director of General Motors Corp. at a special meeting of the board of directors held in New York. Mr. Purvis succeeds the late William McMaster, who was chairman of Canadian Industries.

Alloy Completes Equipment

DETROIT, June 9—Installation of new equipment, bringing the production capacity of the plant of the Alloy Steel Spring and Axle Co., Jackson, Mich., to approximately 2000 bumpers a day, has been practically completed, according to Otto H. Schulz, who became president and general manager recently. In peak operation the plant employs about 500 men. Mr. Schulz is also president of the Jackson Motor Shaft Co. and vice-president of the Muskegon Motor Specialty Co., following the recent merger of these concerns.

Snap-On Transfers Plant

MILWAUKEE, June 9—The Snap-On Wrench Co., with works in Milwaukee and general offices in Chicago, has completed the transfer of both divisions to its new plant in Kenosha, W i s. The concerns manufacture wrench sets for original equipment of passenger and commercial cars, and other tools for mechanic, shop, etc.

Alvan Macauley Reelected to Head N. A. C. C., Cord and Miller Made Directors, at Meeting

NEW YORK, June 9—With most of the presidents of the leading motor companies in attendance at their annual meeting Friday of last week, Alvan Macauley, head of the Packard Motor Car Co., was reelected president of the National Automobile Chamber of Commerce, to continue another year.

Leading executives discussed the problems of the industry which was stated to have handled itself in creditable fashion, with a full recognition of the changes from last year and with makers adapting themselves to the new conditions.

Either presenting papers or participating in the discussions were: A. R. Erskine, president, Studebaker Corp. of America; Alfred P. Sloan, Jr., president, General Motors Corp.; Roy D. Chapin, chairman, Hudson Motor Car Co.; James D. Mooney, president, General Motors Export Co.; R. H. Grant, vice-president, General Motors Corp.; Walter P. Chrysler, president, Chrysler Corp.; William J. McAneeny, president, Hudson Motor Corp.; G. M. Williams, president, Marmon Motor Car Co.; Paul Seiler, president and general manager, General Motors Truck Co.; J. A. Bohannon, president, Peerless Motor Car Co.; George M. Graham, vice-president, Willys-Overland Co.; R. P. Page, Jr., president, Autocar Co.; R. G. Stewart, vice-president and production manager, Stewart Motor Corp., and Martin L. Pulcher.

Linwood Miller
Made Director

R. A. Graham
Export Head

E. L. Cord, president, Auburn Automobile Co. and Cord Corp., was elected a director of the chamber to succeed R. E. Olds, long an active figure in the industry and a director in the Automobile Chamber almost since its organization, who declined reelection. L. A. Miller, president, Willys-Overland Co., was elected in place of John N. Willys, recently appointed Ambassador to Poland.

A full list of the officers and directors after the election follows: Alvan Macauley, Packard, president; Alfred H. Swayne, General Motors, vice-president; A. R. Erskine, Studebaker, vice-president, Passenger Car Division; A. J. Brosseau, Mack, vice-president, Commercial Car Division; Charles W. Nash, Nash, secretary; H. H. Rice, General Motors, treasurer; Roy D. Chapin, Hudson; E. L. Cord, Auburn; Walter P. Chrysler, Chrysler; Charles D. Hastings, Hupmobile; Frederick J. Haynes, Durant; William E. Metzger, Federal; Robert W. Woodruff, White; Robert C. Graham, Graham, L. A. Miller, Overland; Alfred Reeves, general manager.

Alvan Macauley
Reelected

Robert C. Graham, vice-president of Graham Motor Car Co., was appointed chairman of the Export Committee, in place of John N. Willys, who resigned after his appointment as Ambassador to Poland.

It was voted to have the New York Show open Jan. 3 to 10, and the Chicago Show open Jan. 24 to 31. Truck manufacturers, under the leadership of A. J. Brosseau, president of Mack Trucks, Inc., held a special session, considering recent revisions of the Hoover Code affecting commercial car operations.

E. L. Cord
Made Director

Action of the National Conference on Street and Highway Safety in amending the code to provide for complete reciprocity for all vehicles and for increased weight limitations on trucks was endorsed by the truck manufacturers.

"Nationwide adoption of the Hoover Code recommendations on reciprocity and truck weights will be of great economic benefit to the public, because of the distribution savings that they will effect," A. J. Brosseau, New York, president of the Mack Brothers Motor Car Co., and chairman of the Chamber's truck committee, declared.

Elimination of the "duplicate taxation evil," an obstacle to trucks in interstate transportation, will be accomplished.

R. E. Olds
Resigned

Steel Markets Steady With Sheet Demand Off

Automotive Buying is in Small Lots; Backlogs Fair

NEW YORK, June 12—The leading interest's monthly unfilled tonnage statement, which was issued Tuesday afternoon, had little effect on sentiment in the steel market. Wall Street had looked for a sharper decline in the backlog than that of 294,993 tons disclosed by the report, but steel market interests had generally figured that the Corporation would enter the last month of the year's second quarter with a backlog of around 4,000,000 tons.

While the Corporation's books at the end of the second quarter of last year showed a backlog of 4,256,910 tons, it is a foregone conclusion that unfilled orders on June 30 will exceed those on the Corporation's books at the end of the year's second quarter in 1926, 1927 and 1928. The steel market's picture over longer periods than week-to-week estimates of mill operations is far more cheerful than that afforded by the latter. There has been no change in the operating schedules of the Mahoning Valley industry as a whole.

Some of the sheet mills have slowed down output, demand for body stock being especially light. Pittsburgh district mill executives are preparing protests against freight rates and switching charges which, it is claimed, discriminate against Pittsburgh district producing points and give competitive steel shipping centers considerable advantage. Prices hold fairly steady.

Nearly all of the automotive buying is in small lots, and while concessions continue to be made here and there in base prices when extras are attractive, the market is certainly not weaker than it was a fortnight ago.

Pig Iron—The market is marking time. In Chicago, foundry iron is more generally quoted at $18.50 than at $19 which has become a nominal asking price. Malleable iron is quoted on a parity with foundry. Detroit quotations are unchanged.

Aluminum—Automotive demand is quiet. Prices for secondary metal are slightly lower, the 98 @ 99 per cent grade quoted at 21 cents. Secondary No. 12 alloy is quoted at 15½ @ 16 cents. The supply of scrap is large. Virgin metal is unchanged in price.

Copper—One of the large producers is reported to be preparing for an increase in operations, accepting the 13 cent price as here to stay for some time, and preferring to step up production at that level than to hold it down to the present 60 per cent without much hope of an early change in the situation. A turn for the better is not looked for before Oct. 1.

Tin—The London market was closed at the beginning of the week because of the Whitsuntide holidays, and without its lead trading here was almost at a standstill, spot Straits being quoted at 30.87½ cents. Although the United States is the largest consumer of tin, sentiment here is not favorable to the restriction of output in the Malay States.

A. E. Coleman

WASHINGTON, June 10—A. E. Coleman, president of the Coleman Motors Corp., manufacturer of four-wheel drive trucks, died at his home in Denver, Colo., on May 9. His death was the result of a long illness.

Consolidated Instrument Plans Merger With Bendix

Directors Approve Offer for Purchase of Assets

NEW YORK, June 9—Directors of the Consolidated Instrument Co. of America, Inc., have approved and recommended to stockholders an offer from the Bendix Aviation Corp. to purchase the assets of the Consolidated Co. for 16,416 shares of Bendix stock, which will permit an exchange of twelve shares of Consolidated for one of Bendix.

Conclusion of arrangements for this exchange is announced by Lucian L. Friez, chairman of the Consolidated board, who says that Julien P. Friez & Son, Inc., of Baltimore, and the Aircraft Control Corporation and the Molded Insulation Co. of Philadelphia, all Consolidated units, would be included in the transaction. The Bendix Corporation intends to retain the present personnel of Consolidated and its divisions.

It is expected that the Friez Corporation, which manufactures meteorological instruments, would become a division of the Bendix organization, while the activities of Consolidated, Aircraft Control and Molded Insulation would be coordinated with those of the Pioneer Instrument Co. of Brooklyn, N. Y., a Bendix division.

Brooks Motors Liquidating

TORONTO, ONT., June 9—Justice Jeffrey at Osgoode Hall today issued an order winding up Brooks Steam Motors, Ltd., a Dominion incorporate company with headquarters at Stratford, Ont. The application was first made in August, 1928, by F. W. Wegenast, acting for John Edgar Willoughby, Toronto, who held 50 shares preferred stock. The recent affidavit of Eric G. Taylor showed comparison of assets and liabilities made the company a going concern.

Midwest Steel Building

CHICAGO, June 9—Construction on the proposed $50,000,000 Gary, Ind., plant of the Midwest Steel Company, newly formed subsidiary of the National Steel Company, will be started immediately, according to announcement from the Midwest company.

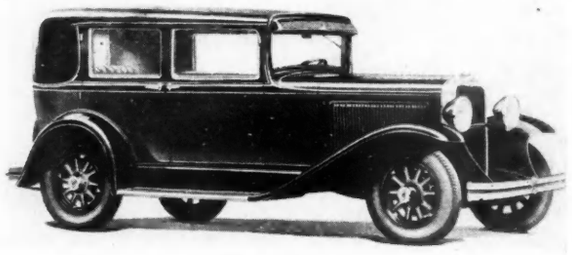
Cord Sales Increase

AUBURN, IND., June 9—Sales of Cord Front Drive cars in May show an increase of 23 per cent over the previous month, N. E. McDarby, director of sales, announced today. Auburn has added 142 dealers to its organization in the last 60 days, according to Mr. McDarby.

Buick Takes Omaha Agency

OMAHA, June 10—Sale of the wholesale automobile distribution business of the Nebraska Buick Auto Co. to the Buick Motor Co., Flint, has been announced by H. E. Sidles, Lincoln, and Lee Huff, Sr., Omaha, president and vice-president of the distributorship.

Durant
is marketing the new four-door coach pictured here



Freight Rate Upheld

WASHINGTON, June 12—The first-class rates of $4.40 and $3.71 per 100-lb., minimum 10,000-lb., respectively, on automobiles and extra parts, in carloads, from Flint, Mich., to Salt Lake City and from St. Louis to Salt Lake City and Ogden, Utah, are not unreasonable, according to a proposed report by Examiner J. O. Cassidy of the Interstate Commerce Commission. He recommended that the commission dismiss the complaint made against these rates by the Alkire-Smith Auto Co., Salt Lake City. The issue involved a matter of tariff interpretation.

German Sales Gain But U.S. Units Lose

BERLIN, June 9—Sales of automobiles in Germany during the first four months of the year have nearly equaled those of the same months of 1929 and are rapidly increasing. The proportion of small cheap cars, however, is increasing at the expense of heavy cars and the proportion of American motor trucks in the total sales has declined.

To Build French Planes

NEW YORK, June 9—Formation of the Avileo Airplane Corp. to manufacture in the United States landplanes, seaplanes, and amphibions designed by the Etablissements Liore et Olivier, France, has been announced here. The corporation has begun introduction in this country of the Avileo Flying Boat, equipped with a Salmson engine of 120 hp. or any other engine of equivalent power. The boat is designed to have a wing-spread of 41 ft., 2 in., and an overall length of 24 ft., 5 in. Actual manufacturing is expected to begin within six months.

Ford Dealers Boosting Trucks

DETROIT, June 9—Ford dealers throughout the United States will unite this week in staging a national Ford truck week during which they will arrange special demonstrations of the four-speed Model AA truck.

Emerson Output Increases

BATAVIA, ILL., June 7—May shipments of commercial bodies from the local plant of the Emerson-Brantingham plant reached record levels for any month since the truck body plant was established here, according to L. O. Weaver, general superintendent. W. S. Hyslop has recently been appointed in charge of the engineering division of the plant.

Palmer Plans New Plant

LOUISVILLE, KY., June 9—Lawrence Bernard Palmer-Ball, president of the Palmer Asbestos & Rubber Co., Chicago, and the Palmer Equipment Co., Chicago, on June 6, announced from his home at St. Matthews, Ky., plans for construction of the first unit of a $1,000,000 plant in St. Matthews, for production of asbestos and rubber goods including brake linings and brake blocks.

The first unit of the plant will be two stories, of fireproof construction, costing $250,000, and other units will be added as the business progresses. The plant in the Louisville district will specialize in brake linings and blocks.

Pekin Adds Products

PEKIN, ILL., June 9—A new and improved line of garage and shop equipment, including universal tire changing machine, armature testing stand, gear puller, groove cleaner and caster jack, has been added to the Pekin Foundry & Mfg. Co. products, A. V. Martens, president and manager, announced this week. Additional items will be added later. The new lines will not affect the company's output of heavy and light gray iron, semi-steel and nickel alloy casting. J. F. Jenks has been appointed manager of the garage equipment sales division.

Producing Air Cleaner

SPOKANE, June 9—The C. R. C. Air Cleaner Co. is now in production on its automobile air cleaner. Claim made for this cleaner is that it practically eliminates motor resistance, thus overcoming the tendency of air cleaners to cut down gas mileage.

Continental Plans General Vacation

DETROIT, June 9—In line with a number of other large manufacturing concerns, Continental Motors Corp. announces a general vacation for all employees for two weeks beginning June 29 and ending July 14.

Opens Chicago Factory

CHICAGO, June 9—A Chicago branch factory is being opened here by the National Harris Wire Co., according to announcement by Frank R. Harris, president.

Reserve Rule Hinders Car Sales, Brown Says

Refusal to Rediscount Note Helps Depression, Is View

MILWAUKEE, June 9—Archaic regulations prohibiting the acceptance of finance company paper by the Federal Reserve banks for rediscount are responsible at least in part for the depression registered in automobile production with consequent declines in industries dependent upon motor car sales, according to Victor L. Brown, head of the Motors Acceptance Co. of Milwaukee, and president of the National Association of Finance Companies.

"Despite stock market gyrations of recent months and the marked reduction in automobile output, total retail sales are holding up better than is generally realized," said Mr. Brown. "While factory production has been on low gear, dealers have been selling off any overstock of new and used cars and there has been no noticeable increase in defaults, repossessions and delinquencies.

"The troubles facing automobile dealers come not alone from hesitancy of the public to buy cars but in part from the difficulties experienced by both dealers and finance companies in obtaining sufficient funds from banks to handle the business offered. The objection of banks to finance company paper is that it is not eligible for rediscount. Banks are naturally anxious to have as much eligible paper as possible in their portfolios."

Ford Building New Plant

LOS ANGELES, June 9—The Ford Motor Co. is building a 12-acre plant at Richmond, Calif., which will contain 500,000 sq. ft. of floor space. Test piles for this $5,000,000 project have already been driven and work is rapidly progressing with a view to early fall occupancy. The plant, when completed, will employ approximately 2700 men and turn out around 400 cars daily. This plant is one-third larger than the Ford plant recently completed at Long Beach, Calif.

Independent Buys Company

CHICAGO, June 9—Expansion of the business of the Independent Pneumatic Tool Co. is indicated in the purchase of the Cochise Rock Drill Mfg. Co., of Los Angeles, Calif., according to well-informed sources. The plant of the latter firm will be expanded and the product of the company incorporated in the present line of the Independent company.

Buick Takes Territory

MINNEAPOLIS, June 9—The Buick Motor Co. has opened a branch here in charge of O. L. Waller, formerly regional service manager in Chicago. This succeeds the Pence Automobile Co., after 26 years of operation. The territory is Minnesota, the Dakotas, Montana, parts of Wyoming and Wisconsin.

Buses Oust Trolleys in Iowa City

IOWA CITY, IOWA, June 9—A ten-year bus franchise has been approved by voters of the city to supplant the traction line now in bankruptcy. Henry Negus, receiver for the Mississippi Valley Electric Co., the traction line, will operate the bus service and expects to have delivery upon the buses within a six weeks' period. The vote was 1638 for and 337 against the bus franchise.

LaFrance Output Up

DETROIT, June 10—F. D. Soper, vice-president of the LaFrance-Republic Corp., has announced that the output of the company's plant at Alma, Mich., in May showed an increase of 100 per cent, as compared with the same month last year, and that from both a production and sales standpoint last month was the biggest month of the year, exceeding April by approximately 20 per cent. "Not only have we doubled our production over last May, but we have also expanded our distributor organization materially during the last 30 days," Mr. Soper said.

Kari-Keen to Reorganize

SIOUX CITY, IOWA, June 9—Plans for reorganization of the manufacturing operations of the Kari-Keen Aircraft, Inc., were announced incidental to the offering of a $40,000 block of preferred stock last week. Increase in working capital to market the new Kari-Keen "90" model, extension of distributing facilities and readjustment of factory operations will be undertaken. Ryal Miller, president of the company, announcing the new expansion said that $90,000 had been spent in the past two years in perfecting the new ship.

Warner to Make Engine

DETROIT, June 9—Warner Aircraft Co. plans to start production of its new five-cylinder engine immediately at the rate of one a day. The engine has just been awarded its approved type certificate by the Department of Commerce with a 90 hp. rating instead of 85 hp., for which it was designed.

De Soto Behind on Orders

DETROIT, June 10—With orders from De Soto dealers outrunning production by 50 per cent, the introduction of a new De Soto six at a lower price is satisfactory to factory officials, according to L. G. Peed, general sales manager of the De Soto Motor Corp.

Making Overload Spring

SPOKANE, June 9—Pohl Auto Spring Works, S. 3725 Grand Ave., is bringing out an overload spring for Model AA Ford trucks. The overload spring does not go into action until rated capacity load has been reached.

Legal Aspect of Aviation Studied at Conference

International Commission Sub-Committees Fail to Agree

WASHINGTON, June 10—Sub-committees of the international technical committee of legal experts on Aviation met at Paris in May to give preliminary study to various questions which will be considered further at the next meeting of the full commission at Budapest in September, W. L. Finger, Automotive Trade Commissioner to Europe, Paris, informs the Department of Commerce. Representatives of 29 states were included in the four sub-committees.

Among the subjects discussed were: an international agreement on the conditions of ownership of a plane, on an aeronautical register, on the hypothecation of planes and on air privileges. The object of such an agreement is the establishment of a system of credit for airplane purchases, which would guarantee the rights of both purchaser and creditor.

The committee also considered the draft of an agreement regarding responsibility for damage to persons or property on the ground, which would supplement the proposal made at the Warsaw meeting of the juridical experts on aviation last year relative to the responsibility of the air carrier regarding passengers and merchandise transported. A project for defining the legal position of the commander of an airplane and of his staff was also studied by the committees. No decision was reached on any of these points.

To Finance Austin Cars

BALTIMORE, June 9—The conclusion of a national retail time-sale financing agreement between Commercial Credit Companies and the American Austin Car Co. of Detroit was announced here today. Under the agreement the dealers and distributors of the American Austin car will be offered a standard plan for financing their time sales.

Minnesota Licenses More Cars

MINNEAPOLIS, June 9—Motor Vehicle licenses have brought Minnesota $423,925 more this year than the first half of 1929. The total is $10,396,209.76 for 697,541 licenses compared with $9,972,284.12 for the period in 1929 when 661,420 license plates had been issued. The secretary of state expects the total for 1930 to be 750,000 licenses, against last year's 729,242.

Transue Issues Booklet

ALLIANCE, OHIO, June 9—A new booklet describing Transue & Williams drop forged chain for industrial conveyors has been issued by the Transue & Williams Steel Forging Corporation, Alliance, Ohio. This booklet gives specifications, some technical details, and shows a number of important conveyor installations using the T. & W. chain.

Used Car Market Better During the First Quarter

Financing Figures Show Gain On Number Sold

WASHINGTON, June 10—Reports of 455 financing organizations reveal that the market for used cars during the first quarter of the current year was unusually favorable, showing a substantial increase both in numbers and value over the corresponding period of last year, it was stated June 7 by Ernest D. Cavanaugh, of the automotive division, Department of Commerce.

The fact that the public was hesitant in purchasing new machines this year, as shown by the automobile financing data, is one probable explanation of the increased activity in the used car market, it was explained. More used cars also were probably available to the public during January, February and March of this year than previously, giving a wide variety from which the buyer could select a car suitable to his needs and within his purchasing power, according to Mr. Cavanaugh.

During the initial three months of this year, financing of 317,105 used cars aggregated $95,815,294, as compared with 266,533 machines totaling $83,145,619 for the corresponding period last year. Financing of used cars during the 12 months of 1929 amounted to $468,169,568.

Indian Alters Plant

SPRINGFIELD, MASS., June 10—Alterations are being made on the first and second floors of the Indian Motocycle Company's plant in order to concentrate production of the duPont automobile on the floors. G. B. Weaver, Chief Engineer for duPont Motors, Inc., has come from Wilmington, Del., to organize the engineering department of that company here. The two companies are officered for the most part by the same men. Indian Motocycle Co. will bring out late in the summer a new traffic car having truck body in the rear of the chassis, with shelter for the driver and designed to carry a pay load of 1000 lb.

Detroit S.A.E. Honors Clarkson

DETROIT, June 9—The Detroit office of the Society of Automotive Engineers was closed last Friday because of the death in New York City Thursday of Coker Clarkson, for 21 years secretary and general manager of the organization. Mr. Clarkson was the first and only honorary member of the S.A.E., having been elected to that office at the recent summer meeting.

Cleveland Section Elects

CLEVELAND, June 9—D. S. Cole of the Leece-Neville Co. was elected chairman of the Cleveland Section, Society of Automotive Engineers, at the May meeting of the section. Other officers elected were W. E. England, vice-chairman; Hoy Stevens, Cleveland Railway Co., secretary, and Ferdinand Jehle, the White Co., treasurer.

+ + CALENDAR + + OF COMING EVENTS

SHOWS

Drontheim, Norway, Automobile..June 12-18
Bordeaux, France, Bordeaux Fair, June 15-30
Posen, Poland, International Transport and Touring Exposition..June 29-July 13
Lwow, Poland, Sample Fair .....September
London, England, Olympia Show...October
Berlin, International Automobile..Nov. 6-16

CONVENTIONS

National Automobile Chamber of Commerce, Annual Meeting, New York, June 6
A. S. M. E., Semi-Annual Meeting, Detroit .....June 9-12
Natl. Electric Mfg. Association, Washington, D. C. .....June 12
A. S. M. E., Oil, Power & Gas Div., State College, Pa. .....June 12-14
World Power Conference, Berlin..June 16-25
Railway Supply Mfrs. Assn., Meeting and Exhibit, Atlantic City..June 18-25
American Railway Association, San Francisco .....June 23-26
American Society for Testing Materials, Annual Meeting, Atlantic City .....June 23-27
Steel Founders Soc. (Midsummer Convention) White Sulphur Springs, June 26-28
American Electroplaters' Society, Annual Meeting, Washington, D. C., June 30-July 3
Manufacturers' Aircraft Association, New York .....July 1
Society of Automotive Engineers, Aeronautical, Chicago .....Aug. 26-28
Eastern States Exposition, Springfield, Mass. .....Sept. 14-20
National Safety Council, Annual Safety Congress, Pittsburgh....Sept. 29-Oct. 4
Sixth International Road Congress, Washington, D. C. .....Oct. 6-11
Exhibition—American Roadbuilders Association, Washington, D. C....Oct. 6-11
Society of Automotive Engineers, Production, Book-Cadillac Hotel, Detroit .....Oct. 7-8
Society of Automotive Engineers, Transportation, Pittsburgh .....Oct. 22-24
Motor and Equipment Association, Convention, Cleveland .....Nov. 10-14
N. S. P. A. Convention, Cleveland, Ohio, Nov. 17-21

SALONS

Chicago, Drake Hotel .....Nov. 8-15
New York, Commodore Hotel..Nov. 30-Dec. 6
Paris, France .....Oct. 2-12
Prague, Czechoslovakia .....October
Paris, France, Salon (Commercial Vehicles) .....Nov. 13-23
Brussels, Belgium, Salon .....Dec. 6-17

RACES

Belgium .....July 5-6
Germany (Grand Prix) .....July 13
Belgium (European Grand Prix)....July 20
Spain .....July 27
Italy (Grand Prix) .....Sept. 7
France (Grand Prix) .....Sept. 21

To License Glider Pilots

WASHINGTON, June 14—Three classes of glider pilot licenses—student, non-commercial and commercial—are provided for under amendments to the Air Commerce Regulations announced today by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics.

A.C.C. to Honor Byrd

NEW YORK, June 9—The aviation industry is preparing to honor Rear Admiral Richard E. Byrd and members of his expedition at a dinner to be given by the Aeronautical Chamber of Commerce of America, Wednesday evening, June 25, in the Hotel Astor.

Auburn's Offices Ready July 15

AUBURN, IND., June 9—Auburn's new $300,000 administration building, located at Auburn, Ind., will be ready for occupancy by July 15, R. H. Faulkner, vice-president, announces.

Construction Drops to New Low of Year

Reports Indicate Machine Tool Sales Are Off

PHILADELPHIA, June 12—Construction of automobile plant additions and automotive factories showed a decided drop last week, as compared with the same period of 1929, and as compared with the preceding week of this year. This period, however, has shown a seasonal slump in previous years.

Machine tool sales also showed a drop, buying in manufacturing centers having been off with only a few spotty sales reported.

Among the reports of new automotive construction made this week were:

Bendix Aviation Corp., South Bend, has arranged to purchase Cory & Son, Inc., and will manufacture marine signaling, lighting equipment.

Charles Goodman, Brooklyn architect, plans $135,000 repair and service garage.

Boeing School of Aeronautics, Seattle, has let a contract to the Austin Co. to increase the floor space of the school by 9000 ft. in hangar 4A, Oakland Airport.

Kingsbury Machine Tool Corp., Keene, N. H., plans to erect brick and steel addition to factory.

Timken Roller Bearing Co., Canton, Ohio, plans a double building to be used as a cone hardening shop, to cost $100,000.

E. W. Steffen and H. S. Wigle, Spokane, Wash., are planning erection of an automobile freight depot to cost $100,000. Pooling automobile freight franchises of lines to use the building along with the building is being considered to finance the project.

Wayne County Sales Gain

DETROIT, June 9—New passenger car registrations in Wayne County during May totaled 9983, an increase of 507 or more than 5 per cent over the total of 9476 in April, and a decrease of 11,036 from the total of 20,512 in May, 1929. Total to date this year is 36,694, as compared with total for the first five months of 1929 of 61,823.

Commercial vehicle registrations for the county last month totaled 592, as compared with 639 in April and with 463 in May, 1929. Ford was first on the list with 373 and Chevrolet ranked second with 101. Total commercial vehicles registered to date was 2714, as compared with 4800 in the corresponding period last year.

Philadelphia Ford Plant Opens

PHILADELPHIA, June 9—Assembly of Ford trucks on a schedule of 150 a day was begun here today in the re-equipped Ford assembly plant, which has been out of commission since the opening of the Chester, Pa., plant several years ago. In addition to the assembly lines, the plant will house a permanent exhibit of Ford Products on the second floor.

Stinson Shipments Gain

WAYNE, MICH., June 9—May shipments of the Stinson Aircraft Corporation were 54.6 per cent greater than in April of this year, William A. Mara, vice-president, announced today. Fifty-one planes were shipped in May against thirty-three in April.